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# Appendix C2

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## MORRISON RUN PROJECT

## BIOLOGICAL EVALUATION

**USDA Forest Service  
Allegheny National Forest  
Bradford Ranger District**

Warren and McKean Counties, Pennsylvania  
(Mead, Hamilton, and Corydon Townships)

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## I. INTRODUCTION

The Forest Plan identifies 77 species with potential viability concerns for the ANF. Five are currently listed as federally threatened or endangered, three are Federal candidate species, and 61<sup>a</sup> are Regional Forester Sensitive Species (USDA-FS 2007b). Eleven species with viability concerns (SOC) that are not included on the RFSS or threatened and endangered species lists are evaluated in the Wildlife Report (Morrison Run project file). Threatened and Endangered species are considered in the Morrison Run Biological Assessment (Appendix C1). This Biological Evaluation (BE) includes a brief description of project area habitat for those species found on the Regional Forester Sensitive Species (RFSS) list for the Allegheny National Forest (ANF). It is an analysis of potential direct, indirect, and cumulative impacts to these species from the activities proposed under each alternative in the Morrison Run Project Environmental Assessment. This analysis evaluates the impacts in order to:

- Avoid or minimize impacts to RFSS, whose viability has been identified as a concern (Forest Service Manual (FSM) 2670.32).
- Analyze the significance of the potential adverse effects on the population or its habitat within the area of concern and on the species as a whole if impacts cannot be avoided (FSM 2670.32).

In 2010 the Eastern Region (R9) RFSS list was reviewed and updated in coordination with the Regional Office in order to include all new species that warranted being put on the list and remove those that no longer required a sensitive species status. In coordination with other Forests across the Eastern Region and multiple natural resource agencies, Risk Evaluations were completed by conducting a thorough review of available information and monitoring data across the ANF and resulted in a final list of 82 RFSS which was submitted to the regional office in February of 2011. Information from draft and final Risk Evaluations were considered in the effects analysis completed for the Morrison Run Project for species proposed for the to RFSS list.

Section 3 analyzes the 2006 list (61 species) with the following three exceptions: the sheepnose, rabbitsfoot, and rayed-bean mussels. These are RFSS that are also federal candidate species and therefore they are analyzed in the project Biological Assessment (Appendix C1). Section 4 discusses the 28 species proposed for addition to the 2011 RFSS list and specifies those that are proposed to be removed (7 species). The analysis of potential effects of the alternatives assumes that Forest Plan Standards and Guidelines and site-specific mitigations would be followed during implementation to reduce impact of the proposed activities.

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<sup>a</sup> Since the completion of the Forest BE (2007), the bald eagle was removed from the Endangered Species List (August 9, 2007) by the United States Fish and Wildlife Service (FWS) and it was then added to the ANF RFSS list at this time for a total of 61 species. The 61 RFSS species include three Federal candidate species.

## II. EFFECTS OF THE PROPOSED ACTIONS

### Analysis Description

The Morrison Run project area is about 19,705 acres, including 607 acres of private land, and the cumulative effects analysis area for wildlife totals 29,121 acres, including 7,557 acres of private land. This evaluation concentrates on the species with suitable occupied or unoccupied habitat in the project area. Species are first divided into habitat occupancy categories (Table 1, columns 2-4) and then further divided alphabetically by class and common name. In order to avoid repetition, some species are grouped and analyzed together according to their primary habitat requirements. The preferred habitat description is general and does not disclose the site-specific potential habitat or species locations in the project area except in the case that an RFSS is located in a unit with a proposed action. In these cases, mitigations must be site-specific in order to protect the species. Species that were not identified during field surveys and that have no suitable habitat in the project area have a ‘**no impact**’ determination and will not be discussed further.

For details on the current management direction, project location, description of the proposed action, effects analysis boundaries and rationale, previously approved activities and oil and gas development within the analysis areas see pages 4-10 of the Morrison Run Project Biological Assessment (Appendix C1). Site-specific information related to treatments can be found in Appendix A of the Morrison Run Project EA and in the Morrison Run Project Wildlife and Sensitive Plants Implementation Guide (project file). This BE also incorporates by reference the standards and guidelines established in the Allegheny National Forest (ANF) Land and Resource Management Plan (Forest Plan; USDA-FS 2007a) that specifically protect these species and eliminate or minimize impacts from proposed actions. For further information on the life history, population trends, threats, habitat status and the effects analysis for the Forest Plan as it relates to the RFSS, refer to the ANF Biological Evaluation (Forest BE; USDA-FS 2007, pp. 133-293) and the Draft Allegheny National Forest Risk Evaluations for Additional RFSS (USDA-FS 2010) which are incorporated here by reference. The ANF Final Environmental Impact Statement (FEIS; USDA-FS 2007b), and the ANF Record of Decision (ROD; USDA-FS 2007c) are also incorporated by reference.

## III. 2006 REGIONAL FORESTER SENSITIVE SPECIES LIST

### Status of Regional Forester Sensitive Species in the Project Area

Table 1 summarizes the status of sensitive species in the Morrison Run project area. Each species is categorized depending on their known occurrence and available habitat: 1) species occurrence has been documented in the past and there is occupied habitat in the project area, 2) occurrence has not been documented in the project area, but suitable habitat is present and 3) occurrence has not been documented in the recent past and suitable habitat is not present.

**Table 1. Status of Regional Forester Sensitive Species in the Project Area.**

Species	Occupied Habitat	Suitable Habitat (Presence not Documented)	No Suitable Habitat
<b>Birds</b>			
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	X		
Northern goshawk ( <i>Accipiter gentilis</i> )	X		
Osprey ( <i>Pandion haliaetus</i> )	X		
Yellow-bellied flycatcher ( <i>Empidonax flaviventris</i> )		X	
<b>Fishes</b>			
Bluebreast darter ( <i>Etheostoma camurum</i> )			X
Burbot ( <i>Lota lota</i> )		X	
Channel darter ( <i>Percina copelandi</i> )	X		
Gilt darter ( <i>Percina evides</i> )	X		
Gravel chub ( <i>Erimystax x-punctata</i> )			X
Longhead darter ( <i>Percina macrocephala</i> )			X
Mountain brook lamprey ( <i>Ichthyomyzon greeleyi</i> )		X	
Mountain madtom ( <i>Noturus eleutherus</i> )			X
Northern madtom ( <i>Noturus stigmosus</i> )			X
Spotted darter ( <i>Etheostoma maculatum</i> )			X
Tippecanoe darter ( <i>Etheostoma tippecanoe</i> )			X
<b>Invertebrates</b>			
<b>Aquatic Insects</b>			
Green-faced clubtail ( <i>Gomphus viridifrons</i> )		X	
Harpoon clubtail ( <i>Gomphus desertus</i> )		X	
Maine snaketail ( <i>Ophiogomphus mainensis</i> )		X	
Midland clubtail ( <i>Gomphus fraternus</i> )		X	
Mustached clubtail ( <i>Gomphus adelphus</i> )		X	
Ocellated darner ( <i>Boyeria grafiana</i> )		X	
Rapids clubtail ( <i>Gomphus quadricolor</i> )		X	
Resolute damsel ( <i>Coenagrion resolutum</i> )		X	
Ski-tailed emerald ( <i>Somatochlora elongata</i> )		X	
Uhler's sundragon ( <i>Helocordulia uhleri</i> )		X	
Zebra clubtail ( <i>Stylurus scudderi</i> )		X	
<b>Mammals</b>			
Northern flying squirrel ( <i>Glaucomys sabrinus</i> )	X		
<b>Mollusks</b>			
Creek heelsplitter ( <i>Lasmigona compressa</i> )			X
Long-solid mussel ( <i>Fusconaia subrotunda</i> )			X
Rabbitsfoot ( <i>Quadrula cylindrica</i> ) <sup>1</sup>			X

Species	Occupied Habitat	Suitable Habitat (Presence not Documented)	No Suitable Habitat
Rainbow mussel ( <i>Villosa iris</i> )			X
Rayed-bean ( <i>Villosa fabalis</i> ) <sup>1</sup>			X
Round pigtoe ( <i>Pleurobema sintoxia</i> )			X
Sheepnose ( <i>Plethobasis cyphus</i> ) <sup>1</sup>			X
Snuffbox ( <i>Epioblasma triquetra</i> )			X
Threeridge ( <i>Amblema plicata</i> )			X
Wabash pigtoe ( <i>Fusconaia flava</i> )			X
White heelsplitter ( <i>Lasmigona complanata</i> )			X
<b>Plants</b>			
American fever-few ( <i>Parthenium integrifolium</i> )		X	
American ginseng ( <i>Panax quinquefolius</i> )	X		
Bartram shadbush ( <i>Amelanchier bartramiana</i> )		X	
Boreal bog sedge ( <i>Carex magellanica</i> spp. <i>irrigua</i> )		X	
Bristly black currant ( <i>Ribes lucustre</i> )		X	
Butternut ( <i>Juglans cinerea</i> )	X		
Canada yew ( <i>Taxus canadensis</i> )		X	
Checkered rattlesnake plantain ( <i>Goodyera tessellata</i> )		X	
Creeping snowberry ( <i>Gaultheria hispidula</i> )		X	
Hooker's orchid ( <i>Platanthera hookeri</i> )		X	
Kidney-leaved twayblade ( <i>Listera smallii</i> )		X	
Mountain starwort ( <i>Stellaria borealis</i> spp. <i>borealis</i> )		X	
Mountain wood fern ( <i>Dryopteris campyloptera</i> )		X	
Queen-of-the-prairie ( <i>Filipendula rubra</i> )		X	
Rough cotton-grass ( <i>Eriophorum tenellum</i> )		X	
Stalked bulrush ( <i>Scirpus pedicellatus</i> )		X	
Swamp red currant ( <i>Ribes triste</i> )		X	
Sweet-scented Indian-plantain ( <i>Hasteola suaveolens</i> )			X
Thread rush ( <i>Juncus filiformis</i> )	X		
White trout-lily ( <i>Erythronium albidum</i> )		X	
Wiegand's sedge ( <i>Carex wiegandii</i> )		X	
<b>Reptiles</b>			
Timber rattlesnake ( <i>Crotalus horridus</i> )	X		
Wood turtle ( <i>Glyptemys insculpta</i> )		X	

<sup>1</sup> Proposed for Federal listing as Endangered

## **SPECIES WITH OCCUPIED HABITAT IN THE PROJECT AREA**

### **Birds**

#### **BALD EAGLE (*Haliaeetus leucocephalus*)**

##### **Project Area Habitat**

*Nesting Habitat* - In northwestern Pennsylvania, bald eagles nest in large diameter trees near a body of water. Primary nesting habitat (PNH) in the project area for the bald eagle is defined in the Forest BE as forested acreage within ½ mile of the Allegheny Reservoir. Within the project area it consists of approximately 4,988 acres, all on federal lands and within the cumulative effects area, the PNH is equal to 5,453 acres. There is currently one active eagle nest in the northwestern portion of the project area. Another nest is located 0.75 miles from the southern-most part of the project area.

Around 3.5% of the project area provides mature forest along the reservoir edge which is suitable for nesting, however, only those portions that are not near intensive public use areas, heavily traveled roads or high density of private OGD activity are typically considered suitable for the bald eagle. Core area habitat in the western portion of the project area appears to provide the highest quality nesting opportunities for the bald eagle. Even with the projected private OGD, there would still be relatively undisturbed nesting opportunities along the reservoir. The core area patches located near the Wolf Run Marina are not preferable due to the heavy traffic experienced in the summer months by recreational users.

*Foraging/Roosting Habitat* – Primary foraging and roosting habitat (PFRH) is considered all lands within 100 meters (330 feet) of the reservoir edge. PFRH occurs on 686 acres of the direct and indirect effects analysis area and 772 acres occurs within the cumulative effects boundary. Over 90% of the project area lacks suitable eagle foraging habitat. Roosting and foraging habitat will not be significantly modified under any alternative or private OGD since activities are not anticipated to occur along the reservoir.

##### **Direct and Indirect Effects**

###### *Alternative 1*

There are no activities proposed in this Alternative and therefore there are no direct effects from the activities. Mid-structural forest will continue to mature over the next 20 years. No direct or indirect effects are anticipated under this alternative.

###### *Alternatives 2 and 3*

Neither alternative proposes activities along the reservoir which is where the primary nesting, foraging and roosting habitat occurs in the project area. In addition, there are no indirect effects to water quality (and therefore fish habitat) expected from silvicultural treatments or NNIP treatments because all treatments will implement Forest design criteria (Forest Plan pp. 82 and 83 and proper use of herbicides on page 40 of the Forest BE and USDA-FS 2007d, pp. G2-87). However, there could be potential indirect effects to the existing eagle nest from smoke cause by prescribed fire in stands in the western portion (Compartment 446) of the project area. Smoke management is a consideration in developing a burn plan and burning will be conducted when



wind direction and burning conditions will minimize impacts to the nest. In addition, monitoring of the nest will occur during burns to record any impacts to the nest and halt the burn if winds shift direction.

## **Cumulative Effects**

### *Alternative 1*

There are no Federal activities proposed under this alternative. Although impacts from previously approved vegetation activities and oil and gas development will continue, the effects of this project will not contribute cumulatively under this alternative.

### *Alternatives 2 and 3*

There are considerable changes anticipated to occur to the forest within the cumulative effects area due to private OGD. The changes include the conversion of 1,141 acres of forested lands to un-vegetated or bare habitat which is considered unsuitable for most wildlife. However, Forest Service proposed activities do not contribute significantly to this change in habitat or the long term increase in human activity and therefore these activities are not considered to be the cause of a significant cumulative effect. In addition, reasonably foreseeable private OGD is not anticipated to occur along the reservoir other than in northwestern portion of the project area near FR 625 and therefore suitable nesting, foraging, and roosting habitat for the bald eagle is expected to continue to be widespread across the cumulative effects area.

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when considered in the context of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Suitable bald eagle nesting, roosting, and foraging habitat will continue to be widely available under all alternatives because there are no activities proposed along the shoreline of the reservoir.
- Forest Plan standards and guidelines for water resources and non-native invasive plant species (NNIP) treatments will maintain existing water quality and native fish in ANF streams, impoundments, and reservoirs within the project area. This is expected to maintain eagle foraging habitat.
- In addition to the Forest Plan S&Gs the Bald Eagle is protected by the following:
  - The Forest BA standards and guidelines for protection and monitoring of the bald eagle will remain in place for five years from the date of delisting (August 12, 2007).
  - Management guidelines identified in the Bald and Golden Eagle Protection Act will be followed into the future.

## **NORTHERN GOSHAWK (*Accipiter gentilis*)**

### **Project Area Habitat**

The mature forest habitat within the Morrison Run project area provides many of the preferred nesting and foraging conditions including a preference for relatively high canopy closure (>50%). Currently, 88% of the project area and cumulative effects area provides mid-late structural forest with canopy closures greater than 50% (Tables 2 and 3).

In Pennsylvania, northern goshawks avoided using black cherry as nest trees and there seemed to be a slight preference for both American beech and maple (Kimmel and Yahner 1994). They also prefer habitat with a conifer component. In the Morrison Run project area 13% (1,332 acres) of MA 2.2 and 21% (1,808 acres) of MA 3.0 are typed as black cherry-white ash-yellow poplar forest and are unsuitable for goshawks. Preferred habitat, typed as beech, sugar maple-beech-birch, red maple, and sugar maple forests makes up a larger amount 33% (3,506 acres) of MA 2.2 and 38% (3,176 acres) of MA 3.0. In the cumulative effects area 13% (1,386 acres) of MA 2.2 black cherry-white ash-yellow poplar cumulative effects area and 27% (2,871 acres) of MA 3.0. Beech, sugar maple-beech-birch, red maple, sugar maple typed forest makes up 33% (3,581 acres) of MA 2.2 and 32% (3,332 acres) of MA 3.0. White pine, white pine-hemlock, and hemlock typed forests currently occur on 102 acres within the project area and 111 acres within the cumulative effects boundary. The forest types are not anticipated to change, however the conversion of forested acres to bare areas is expected to increase in the cumulative effect boundary and will affect the amount available of each forest type.

Although goshawks will nest near woodland roads trails or small openings, they usually avoid areas with continuous human activity (USDA-FS 2007, p. 137; USDA-FS 2007b, p. 3-231). For this reason they are considered management indicator species (MIS) which are monitored to assess disturbance-related effects of management (USDA-FS 2007b, p. 3-195, 3-196 to 3-198). It is expected that nests within the project area would be located in the larger, more contiguous, mature forest core areas because these patches offer the greatest isolation from human activity. This is supported by several sightings of goshawks in the Kinzua Heights area (north of State Route 59) and goshawks were heard several times near FR 269AA and FR 268. It is less likely that goshawks will choose to nest in the southern portion of the project area where the patches are long and narrow in shape which does not provide the isolation from human activity the larger patches do. No active nests were found during surveys.

### **Direct and Indirect Effects**

#### *Alternative 1*

There are no anticipated direct effects to the northern goshawk because there are no activities proposed under this alternative. However, human use will continue on road sections that are not decommissioned as proposed under alternatives 2 and 3. In addition, a 5% increase in suitable habitat due to continued forest maturation would mean that >93% of the project area will provide suitable habitat by 2026 (Table 2).

#### *Alternatives 2 and 3*

Activities that include any kind of timber harvest (including pit expansion and new road construction) have the potential to directly harm individuals. However, if active nests are found during implementation, S&Gs for active territories described on p. 85 of the Forest Plan (USDA-FS 2007a) will be followed between April 1 to July 31. Final harvest units, where the most substantial change in mature forest canopy occurs, are usually scheduled during the winter dormant season to optimize the chances for successful forest regeneration. In general, silvicultural treatments are cut under winter frozen conditions to protect soil conditions or for recreation concerns; this timing is useful for protecting sensitive raptors since birds are not in the area during this time and there is no risk of impacting active nests. In addition, during these leaf-off conditions it is easier to detect nests active from the previous season and protect them to ensure they are not harvested during treatments. Under Alternative 2 the amount of suitable habitat will be about 7% less than under Alternative 1 and under Alternative 3 it will be about 5% less. There are no activities proposed which would substantially modify the conifer component of the forest.

**Table 2. Availability of Northern Goshawk Habitat in the Project Area.**

Habitat Description	Current (2011)	2026		
		Alt. 1	Alt. 2	Alt. 3
Mid-late structural forests with canopy closures between 60 and 80%	4,802 acres, 25%	1,575, 8.2%	1,607, 8.4%	1,623, 8.5%
Mid-late structural forests with canopy closures >80%	12,109 acres, 63%	16,230, 85%	14,859, 78%	15,107, 80%

Prescribed burns are proposed under both alternatives and are anticipated to occur in the spring of the 2013 (135 acres) and 2016 (113 acres). The exact time of burn will vary somewhat from year to year depending on site-specific weather and fuel conditions. It is possible to burn in the summer months of June or July, however, it is not likely that this will occur on the ANF due to the fuel types, canopy moisture and desired management objectives. The probability of burns in the month of May is higher, however, this month also does not typically have the desired conditions required to achieve management objectives (Craig Kostrzewski, pers. comm. March 14, 2011). Since the hatching and fledging of chicks peaks at the end of May to the beginning of July (Brinker, 2010), burning is most likely to occur when they will have the least impact to young. The likelihood of prescribed burning resulting in direct mortality due to the incineration of nest trees, or death or injury to individuals caused by smoke inhalation is very low.

The construction and reconstruction of roads may create a temporary disturbance to goshawks. New road construction is minimal (0.7 miles under Alternative 2 and 0 miles under Alternative 3) and is not expected to result in a sizeable alteration to potential goshawk habitat. The reconstruction of 10.2 miles of road under Alternative 2 and 8 miles of road under Alternative 3 may cause more of a disturbance to areas where nests may be active, however standards and guideline place restrictions on management activities in the event that a nest is found (USDA-FS 2007a, pp. 84-85; 88). These road activities will not greatly increase the amount of activities in these areas since high human traffic is already common. The decommissioning of one mile of road will cause temporary disturbance but the benefit of reduced human disturbance in the long term will outweigh any negative effects where high human traffic is already common.

## Cumulative Effects

### *Alternative 1*

By 2031 it is anticipated that >98% of MA 2.2 will be mid-late structural habitat. Across the cumulative effects area mid-late structural habitat will result in 89% suitable habitat in the project area by 2026 (Table 3). Private OGD will reduce the total amount of forested interior habitat available; it is anticipated that 1,141 acres of forested lands will be converted to bare by 2031. These changes create habitat conditions that are considered unsuitable for this forest interior species. However, there are no activities proposed under this alternative and therefore there are no anticipated cumulative effects from Forest Service proposed activities.

### *Alternatives 2 and 3*

By 2031 it is anticipated that >98% of MA 2.2 will be mid-late structural habitat and that MA 3.0 will have suitable mid-late structural habitat on 83.4% and 84.4% under Alternatives 2, and 3 respectively. However, reasonably foreseeable future private OGD will modify the landscape, making it difficult to predict the change in amount of habitat available in the future. Forest monitoring indicates that intensive road or well development can create unsuitable goshawk habitat (USDA-FS 2007b, p. 3-269); presently, over 40% of the project area (federal and private ownership combined) has levels of road and oil and gas development that would generally make habitat conditions less suitable for the northern goshawk. However, the proposed activities do not contribute to this change in un-vegetated habitat or to an increase in human activity and therefore Alternatives 2 and 3 are not considered to be the cause of a significant cumulative effect.

**Table 3. Availability of Northern Goshawk Habitat across the Cumulative Effects Area.**

Habitat Description	Current (2011)	2026		
		Alt. 1	Alt. 2	Alt. 3
Mid-late structural forests with canopy closures between 60 and 80%	8,145 acres, 28%	2,320, 8%	2,438, 8.4%	2,458, 8.4%
Mid-late structural forests with canopy closures canopy closures >80%	17,445 acres, 60%	23,540, 81%	21,689, 75%	22,024, 76%

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Under Alternative 2 the increase in suitable habitat will be about 7% less than under Alternative 1 and under Alternative 3 it will be about 5% less. However, suitable habitat will increase under all three alternatives by 2026. There are no activities proposed which would substantially modify the conifer component of the forest.

- There are considerable changes anticipated to occur to the forested area within the cumulative effects boundary due to private OGD, however the proposed activities do not contribute measurably to this change in core habitat or lead to an increase in human activity and therefore Alternatives 2 and 3 are not considered to be the cause of a considerable cumulative effect.
- If active nests are found during implementation, S&Gs for active territories described on p. 85 of the Forest Plan (USDA-FS 2007a) will be followed between April 1 to July 31.

## **OSPREY (*Pandion haliaetus*)**

### **Project Area Habitat**

*Nesting Habitat* – On the ANF, the Allegheny Reservoir provides some of the highest quality habitat for ospreys. Throughout the region, artificial nesting platforms made from recycled telephone poles have been successful at attracting nesting birds and two such nests exist near the project area: there is one nest site within the southern portion of the project area and one nest less than 0.5 miles outside the northern portion of the boundary. Ospreys on the Forest seem to tolerate human activity as has been shown by the successful nesting and fledging of chicks along the reservoir in close proximity to large highways, boat launches, and other recreational sites.

*Foraging Habitat* – Osprey are mainly fish eaters and suitable foraging habitat occurs primarily along the Allegheny Reservoir. The western boundary of the project area is the Reservoir and over half of the project and cumulative effects area has shores that allow for foraging. In addition, fish habitat structures have been placed in the bays surrounding the project area which is expected to improve fish habitat.

### **Direct and Indirect Effects**

#### *Alternative 1*

There are no activities proposed in this Alternative and therefore there are no direct or indirect effects anticipated under this alternative.

#### *Alternatives 2 and 3*

Neither alternative proposes activities along the reservoir which is where the nesting, foraging and roosting habitat occurs in the project area. The implementation of management activities is not expected to disturb nesting birds since these will not occur in or near bays. In addition, all silvicultural and NNIP treatments will implement Forest design criteria (USDA-FS 2007a, pp. 82-83; USDA-FS 2007, p. 40; USDA FS 2007b, Appendix G1 and G2) in order to prevent potential negative indirect effects to water quality and fish habitat.

### **Cumulative Effects**

#### *Alternative 1*

There are no Federal activities proposed under this alternative. Although impacts from previously approved vegetation activities and oil and gas development will continue to happen, the effects of this project will not contribute cumulatively under this alternative.

#### *Alternatives 2 and 3*

There are considerable changes anticipated to occur to the forest within the cumulative effects area due to OGD in the form of 1,141 acres of forested lands which will be converted from to bare land by 2031. However, osprey nesting and foraging habitat is very site-specific and somewhat restricted to the Allegheny Reservoir shoreline in this project area. A potential negative effect could occur from increased sedimentation from OGD road construction and operation; however the mitigations described under **Fishes** are expected to be implemented to reduce these impacts. The proposed activities, previously approved vegetation activities and reasonably foreseeable future OGD are not anticipated to occur along the reservoir other than in the northwestern section near FR 625 and therefore suitable nesting, foraging, and roosting habitat for the osprey is expected to continue to be widespread across the cumulative effects area.

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Implementation of activities may disturb individuals that are located in areas with activity, however this disturbance is considered to be rare to absent due to the osprey’s habitat needs.
- Neither alternative proposes activities along the reservoir which is where the nesting, foraging and roosting habitat occurs in the project area. In addition, NNIP treatments will implement Forest design criteria which will maintain fish habitat quality.
- There are considerable changes anticipated to occur to the forest within the cumulative effects area due to OGD. However, Osprey nesting and foraging habitat is very site-specific and somewhat restricted to the Allegheny Reservoir Shoreline in this project area and no activities are expected to occur in this habitat.

## **Fishes**

### **CHANNEL DARTER (*Percina copelandi*) and GILT DARTER (*Percina evides*)**

#### **Project Area Habitat**

*Overwinter Habitat* – Both species overwinter in the calm, debris-filled backwater pools of large creeks and small rivers and are commonly found in deeper pools (one meter or deeper). Both prefer clear water and silt-free bottoms or substrates. The channel darter and gilt darter have both been found within the project area. The gilt darter prefers habitats with a permanently strong water flow.

*Spawning Habitat* – The channel darter and gilt darter migrate to areas with moderate to fast-flowing riffles and pools over gravel, rubble, and small boulders.

## **Direct and Indirect Effects**

### *Alternative 1*

There are no direct effects anticipated to these species since there are no in-stream activities proposed under this alternative. Roads that are proposed for decommissioning (1 mile) Forest Service roads or reconstruction (about 10 miles) of private OGD roads under Alternatives 2 and 3 will continue to produce sediment, which could indirectly decrease aquatic habitat quality.

### *Alternatives 2 and 3*

These species can be indirectly impacted by management practices that create sedimentation, alter water quality conditions, physically disturb stream channels or substantially change streamside vegetation. Activities such as timber harvest, herbicide and fertilizer applications, road construction, reconstruction and maintenance are designed, located and buffered according to Forest Plan S&Gs (USDA-FS 2007a, pp. 74-79) in order to protect aquatic and riparian habitats. In addition, as part of Forest Service road maintenance, roads within 300 feet of a stream would be re-surfaced with a harder, high-quality stone running surface such as limestone which generates less fine sediment.

## **Cumulative Effects**

### *Alternative 1*

There are no activities proposed under this alternative. Roads that are proposed for decommissioning (1 mile) Forest Service Roads or reconstruction (about 10 miles) of private OGD roads under Alternatives 2 and 3 will continue to produce sediment. However, there are no cumulative effects anticipated for this alternative because developers follow Forest Plan standards and guidelines (USDA-FS 2007a, pp. 72-79) and/or site-specific mitigation measures to protect aquatic habitat. These are included in the Erosion and Sediment Control Plan that the developer submits to the State for each proposed development. In addition, as part of routine Forest Service road maintenance, roads within 300 feet of a stream will be re-surfaced with a harder, high-quality stone running surface such as limestone which generates less fine sediment.

### *Alternatives 2 and 3*

There are considerable changes anticipated to occur to the forest within the cumulative effects area due to OGD. It is anticipated that 1,141 acres of land will be cleared for OGD which includes each well, road, tank batteries, and associated pipelines. Where dirt and gravel roads are constructed close to streams, these can become a chronic source of sedimentation over the long term. Developers are expected to follow Forest Plan standards and guidelines (USDA-FS 2007a, pp. 72-79) and/or site-specific mitigation measures to protect aquatic habitat. These will be included in the Erosion and Sediment Control Plan that the developer submits to the State for each proposed development. In addition, it is assumed that private land (7,557 acres) timber harvests apply many if not all the state BMPs during their timber harvest operations and as a result, potential effects from sedimentation will be minimized. Forest Service proposed activities will not have a cumulative effect when added to these ongoing activities because appropriate S&Gs (see above) would minimize the impact to these species and their habitat. Potential effects to soil and water resources are analyzed in Chapter 3 of the Morrison Run Project EA.

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- Although sedimentation will continue to be produced on roads proposed for decommissioning or reconstruction, there are no cumulative effects anticipated for this alternative because developers follow Forest Plan standards and guidelines (USDA-FS 2007a, pp. 72-79) and/or site-specific mitigation measures to protect aquatic habitat. These are included in the Erosion and Sediment Control Plan that the developer submits to the State for each proposed development. In addition, as part of routine Forest Service road maintenance, roads within 300 feet of a stream will be re-surfaced with a harder, high-quality stone running surface such as limestone which generates less fine sediment.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- It is anticipated that 1,141 acres of land will be cleared for OGD which includes each well, road, tank batteries, and associated pipelines. Developers are expected to follow Forest Plan standards and guidelines (USDA-FS 2007a, pp. 72-79) and/or site-specific mitigation measures to protect aquatic habitat. These will be included in the Erosion and Sediment Control Plan that the developer submits to the State for each proposed development. In addition, activities such as timber harvest, herbicide and fertilizer applications, road construction, reconstruction and maintenance are designed, located and buffered according to Forest Plan S&Gs (USDA-FS 2007a, pp. 74-79) in order to protect aquatic and riparian habitats. Therefore the impacts are considered negligible under any of the alternatives.

## **Mammals**

### **NORTHERN FLYING SQUIRREL (*Glaucomys sabrinus*)**

#### **Project Area Habitat**

The limited dispersal of individuals due to the isolation of patches of suitable habitat is suspected to be a contributing factor to the decline of northern flying squirrels in Pennsylvania (USDA-FS 2007, p. 209). Northern flying squirrels prefer old growth closed canopy forests where hemlock makes up a large component and where there is a permanent water source. Within the project area there are 6 acres of white pine-hemlock forest type in MA 2.2, 71 acres of hemlock forest type in MA 3.0, and 2,502 riparian acres. Within the cumulative effects analysis area there are 11 acres of white pine-hemlock and hemlock forest types in MA 2.2, 77 acres of hemlock forest type in MA 3.0, and 3,388 riparian acres. Forest types only take into account the dominant vegetation species (>60%) so that although it appears that flying squirrel habitat is limited across the project area, in actuality there is a larger amount of habitat than is represented here. Field observations of the project area show that there are large areas that have the closed canopy forest with the hemlock component desired by the northern flying squirrel. Hemlocks often grow in wet areas and along riparian corridors; therefore the amount of riparian acres is more representative of the available habitat (about 13% of the project area; about 12% of the cumulative effects area). There is one record of a northern flying squirrel in the eastern portion of the project area.



## **Direct and Indirect Effects**

### *Alternative 1*

No direct or indirect impacts to the northern flying squirrel are anticipated under this alternative.

### *Alternatives 2 and 3*

There is a proposal for a shelterwood seedcut and removal cut under both alternatives in stand 455009. The Pennsylvania Natural Heritage Program has named this site a County Natural Heritage Inventory core habitat (Klondike Upland) and recommends timber harvesting be avoided completely within the core habitat area and oil and gas development should not encroach on this area (PA DCNR website accessed March 9, 2011). Because there is no hemlock removal or silvicultural treatments near streams proposed under either alternative, the concern of limited dispersal due to the isolation of patches is not a concern for this project's proposals. In addition, in-stream treatments will take a limited number of trees near streams and will not significantly modify or alter the habitat. Treatments will not significantly reduce habitat connectivity across the forested landscape or across riparian corridors (see Patch Analyst results in Chapter 3 of the EA).

## **Cumulative Effects**

### *Alternative 1*

There are no activities proposed under this alternative which would contribute to a cumulative effect when added to the effects of previously approved timber harvest, private timber harvest or private OGD. The arrival of hemlock woolly adelgid to the ANF has the potential to decrease habitat by reducing the hemlock in the hemlock and mixed conifer/hardwood stands. Proactive efforts are under way on the ANF to find methods to address the concern of hemlock woolly adelgid.

### *Alternatives 2 and 3*

There are considerable changes expected to occur to the forest within the cumulative effects area due to OGD. It is anticipated that 1,141 acres of vegetated land will be cleared for OGD by 2031. This will decrease the amount of available late structural forest available for use by the northern flying squirrel although it is not projected that riparian areas or hemlock stands would be impacted by this development. If there are wells proposed near a known northern flying squirrel site, this will be brought to the attention of the operator during review of the Plan of Operation and measures necessary to mitigate potential impacts will be negotiated. If attempts to mitigate potential impacts are unsuccessful, the PA Department of Environmental Protection will be notified.

## **Determination and Rationale**

### *Alternative 1*

#### **'No impact'**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- There are no activities proposed that would significantly modify hemlock stands or the hemlock component in mixed stands and it is not projected that riparian areas or hemlock stands would be impacted by OGD.
- Because there is no hemlock removal or silvicultural treatments near streams proposed under either alternative, the concern of limited dispersal due to the isolation of patches is not a concern for this project’s proposals.
- The northern flying squirrel will be protected by the following mitigations:
  - There is a proposal for a shelterwood seedcut and removal cut under both alternatives in stand 455009. The Pennsylvania Natural Heritage Program has named this site a County Natural Heritage Inventory core habitat (Klondike Upland) and recommends timber harvesting be avoided completely within the core habitat area and oil and gas development should not encroach on this area (PNHP site accessed March 9, 2011). At a minimum, during implementation, the appropriate mitigation measures will be applied including setting aside a reserve area around the location of the northern flying squirrel site and maintaining >50% of the individual riparian conifer ecological land type polygon in mature hardwoods and conifer, and retain all conifer >18 inches DBH (USDA-FS 2007a, p. 84).

## **Plants**

Surveys were conducted in areas of proposed activities and the following species were documented within the project area. The Forest BE (USDA-FS 2007) identified management activities with negligible, beneficial and/or adverse effects based on suitable habitat, type and location of activity, and methods used for implementation. Management activities with potential beneficial or potential adverse effects are discussed in this analysis; refer to the Forest BE for discussion of activities with potential negligible effects.

### **AMERICAN GINSENG (*Panax quinquefolius*)**

#### **Project Area Habitat**

On the ANF, this species is typically found on north facing slopes under sugar maple, white ash, and basswood canopies. Within the project area there are 31% (3,319 acres) in MA 2.2 and 19% (1,571 acres) in MA 3.0 typed as sugar maple-beech-birch or sugar maple forests. Ginseng is adapted to low light levels and may be found in habitats such as the understory of mid-structural to late-structural deciduous forest. There is one known population in the project area.

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial direct or indirect effects to this species include: fencing, non-native invasive species treatment via manual/mechanical and/or herbicides, and road decommissioning. If this species fell within a fence (not directly impacted by fence construction/maintenance) there is the potential for lessening impact from deer browse. The benefits of such proposed actions outweigh any adverse effects of implementation by lessening the impacts of non-native invasive species. Invasive plant

species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost. The benefits from road decommissioning include limiting non-native invasive plant introduction and spread and limiting access to plant collection and disturbance.

Based on site-specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of adverse direct or indirect effects to this species include burning, vista clearing, regeneration harvests, intermediate harvests, timber stand improvements, activities to enhance late structural conditions, cultural treatments, road construction, road decommissioning and pit expansion. The potential adverse effects from these activities are described on pp. 237-240 of the Forest BE (USDA-FS 2007) and are incorporated here by reference.

### **Direct and Indirect Effects**

#### *Alternative 1*

There are no new activities proposed in this Alternative and therefore there are no direct or indirect effects from proposed activities. The greatest amount of available mid-structural to late-structural forest habitat is anticipated under this Alternative. The proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative and the continued existence and expansion of NNIP may be harmful to individual plants and populations of this species.

#### *Alternatives 2 and 3*

The proposed vegetation management activities may alter canopy closure in varying amounts based on the type of activity and will affect approximately 2,150 acres (12% of current suitable habitat) under Alternative 2 and 1,790 acres (10% of current suitable habitat) under Alternative 3. Note these acreages represent the amount of area (footprint) where activities would take place, some activities occur in stages over the same area over time. As areas with vegetation management transition, mid-story shade may become sufficient for this species, however, it is anticipated that in areas of regeneration harvest this may take decades. In areas of vista clearing, pit expansion, road construction that convert forested areas to non-forest or in areas cut for basking areas, suitable habitat is not anticipated to return for 44 acres under Alternative 2 and 41 acres under Alternative 3. Under both Alternatives 2 and 3 the amount of suitable habitat in the project area would be similar to the current condition (Table 4).

**Table 4. Suitable Habitat for American Ginseng in the Project Area.**

<b>Habitat Description</b>	<b>Current (2011)</b>	<b>2031</b>		
		<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>
Mid-structural forest (51-80 yrs)	2,232	785	683	793
Mid-late structural forest (81-110 yrs)	13,094	4204	3421	3497
Future late-structural forest (111-150 yrs)	2,125	12,961	12,557	12,641
Late-structural forest (151-300 yrs)	43	179	179	179
<b>Totals</b>	<b>17,494</b>	18,129	16,840	17,110

Prior to implementation, in areas of documented occurrence following Forest Plan S&Gs, a reserve area would be delineated around plants/populations that retains adequate forest cover (shade) based on slope and aspect for occupied and suitable habitat within that area of occupancy to conserve this species.

### **Cumulative Effects**

Non-federal activities that occur on Forest Service lands that impact this species are private OGD. Previously approved vegetation management activities on 72 acres will impact suitable habitat for this species. Activities on non-Forest Service lands that may impact this species include direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration /loss from timber harvest, housing development, road construction, invasive plant species or oil and gas development. Within the cumulative effects analysis area privately owned land is comprised of 57 acres as opening/residential, 49 acres as 0-20 year age class and 501 acres as forested. Land conversion from residential development is not anticipated to occur within these private lands in the next 20 years based on past and current levels of residential development in these lands. It is estimated that 75 acres of timber harvest will occur on private lands by 2031. On private lands it is estimated that there is currently 500 or less acres of suitable habitat and that by 2031 there would be approximately 425 or less acres of suitable habitat for this species under all alternatives by 2031. Future private OGD on both private and NFS lands are estimated to convert 790 acres to non-forest conditions.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

#### *Alternatives 2 and 3*

#### **‘May impact individuals, but is not likely to cause a trend towards federal listing or a loss of viability’**

There is documented occurrence of American ginseng in areas with proposed activities and suitable to marginally suitable habitat for this species is estimated to occur on over 80% of the project area. However, reserve areas of sufficient size will be implemented to protect occupied and suitable habitat. If additional plants are documented, protection measures will be implemented according to Forest Plan S&Gs.

### **BUTTERNUT (*Juglans cinerea*)**

#### **Project Area Habitat**

On the ANF butternut occupies rich mesophytic forests, in floodplain and lowland locations with sun to partial shade, though tree vigor and regeneration potential seems to be higher in open canopy conditions. Butternut is most commonly associated with the following forest cover types: Sugar Maple (85 acres in MA 2.2 in the project area), black cherry-white ash-yellow poplar (3,168 acres across both MA 2.2 and 3.0 in the project area), and sugar maple-beech-birch

(4,806 acres across MAs 2.2 and 3.0 in the project area. There are approximately 200 acres of floodplain habitat in the project area. There are 10 trees of this species documented in the Kinzua Beach recreation area.

### **Direct and Indirect Effects**

Based on suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial and/or adverse direct or indirect effects to this species include riparian treatments and non-native invasive species treatment via manual/mechanical removal and/or herbicides. Riparian treatments that remove select trees to stabilize the bank and create pool habitat allow more sunlight that could benefit butternut trees. Adverse effects from this activity to this species during implementation could be the direct trampling of plants. The benefit to habitat from lessening the impacts from non-native invasive species treatment is greater than the adverse effects from such treatments. Invasive plant species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost.

#### *Alternative 1*

There are no new activities proposed in this Alternative and therefore there are no direct effects from proposed activities. New proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative and the continued existence and expansion of NNIP may be harmful to butternut populations.

#### *Alternatives 2 and 3*

Of the proposed activities, only NNIP treatment will occur in areas of occupied habitat for this species. Riparian treatments that include the felling of trees for water course enhancement would benefit this any unknown butternut present in these areas if they received more sunlight from the treatment. If NNIP treatments are implemented near butternuts, the type of treatment chosen will minimize any non-target damage based on site conditions and the following Forest Plan S&G applies:

### **Cumulative Effects**

Non-federal activities that occur on Forest Service lands that may impact this species are associated with private OGD. Previously approved vegetation management activities on 72 acres will not impact suitable habitat for this species. Based on the lack of known occurrences, or suitable habitat on private lands within the cumulative effects area, there are no impacts anticipated on private lands. Future private OGD on both private and NFS lands are estimated to convert 790 acres to non-forest conditions under all alternatives. However, it is anticipated that development within suitable habitat would be limited based on occupied habitat topography, existing structures or existing wells on the north side of SR59.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

### *Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

There is documented occurrence of butternut in the general area proposed for NNIP treatment and approximately 200 acres is considered suitable or marginally suitable habitat. Therefore, there is a possibility of damage to non-target plants or habitat. However, the benefit to habitat from reducing the impacts from non-native invasive species is greater than the adverse effects from such treatments.

The following Forest Plan S&G would minimize impacts: If a butternut tree is found, the tree will be assessed to determine whether it has been affected by the butternut canker disease. If it is determined that the tree may be resistant, activities, which promote seed production and germination such as release, seedbed preparation and fencing should be identified and implemented.

### **THREAD RUSH (*Juncus filiformis*)**

#### **Project Area Habitat**

Thread rush occupies a variety of moist or wet habitats including sandy shores of streams and lakes, bogs and alpine meadows (Gleason 1952). There is a known occurrence in the southwestern portion of the project area along the confluence of Hemlock Run and the Allegheny Reservoir.

#### **Direct and Indirect Effects**

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial and/or adverse direct or indirect effects to this species include non-native invasive species treatment via manual/mechanical and/or herbicides. The benefits of such proposed actions outweigh any adverse effects of implementation by lessening the impacts of non-native invasive species. Invasive plant species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost.

### *Alternative 1*

There are no new activities proposed in this Alternative and therefore there are no direct or indirect effects from proposed activities. New proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative and the continued existence and expansion of NNIP may be harmful to populations of this species.

### *Alternatives 2 and 3*

Of the proposed activities, only NNIP treatment could occur in areas of occupied habitat for this species. However, there are limited known NNIP species within/adjacent to area of occupied and/or suitable habitat. These NNIP would be prioritized for treatment to lessen their impact on this species following Forest Plan S&Gs.

### **Cumulative Effects**

Private OGD on Forest Service lands may impact this species. Previously approved vegetation management activities on 72 acres will not impact suitable habitat for this species. Based on the lack of known occurrences and suitable habitat on private lands within the cumulative effects area, there are no impacts anticipated on private lands. Future private OGD on both private and NFS lands are estimated to convert 790 acres to non-forest conditions under all alternatives. However, it is anticipated that private OGD within suitable habitat would be limited based on occupied habitat topography and proximity to streams and the reservoir.

### **Determination and Rationale**

#### *Alternative 1*

##### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects. The associated benefits from NNIP treatments will not be realized.

#### *Alternatives 2 and 3*

##### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

Because there is documented occurrence of this species in areas that may be proposed for NNIP treatment, the type of treatment chosen will minimize any non-target damage based on site conditions and Forest Plan S&Gs. Invasive plant species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost. Therefore, the benefits of such proposed actions outweigh any adverse effects of implementation by lessening the impacts of non-native invasive species. Furthermore, suitable to marginally suitable habitat is limited in amount and distribution across the project area and is estimated to occur on approximately 50 acres not proposed for management other than non-native invasive plant removal.

### **Reptiles**

#### **TIMBER RATTLESNAKE (*Crotalus horridus*)**

#### **Project Area Habitat**

*Foraging Habitat* – The timber rattlesnake prefers second-growth (predominantly late-structural) woodlands where an abundance of rodents may be found. On occasions they may be common in oak habitat since acorns attract rodents which in turn attract snakes. Timber rattlesnakes also utilize open forest edges, opening, meadows and open shrub-land edges. Therefore, this species may not be as sensitive to some of the edge effects of management activities (such as a change in light or temperature) as some other species. This is supported by several sightings of snakes using shrubby openings and downed tree tops and other slash from harvests along the edges of forest roads within the project area. Encounters with humans are one of the greatest threats to the rattlesnake since it is often killed for sport and/or run over by vehicles on roads within the forest. Roads in particular create barriers for movement and this may lead to genetic isolation of

populations in fragmented habitats. In addition, the timber rattlesnake is extremely sensitive to ground vibration and can detect very slight ground disturbance. The rattlesnake is considered a management indicator species (MIS) for disturbance-related effects of management in late-structural mixed deciduous/conifer forest containing a diverse landscape and structural conditions (USDA-FS 2007b, pp. 3-195, 3-201 to 3-202). The snake is mainly active from April-October making it particularly vulnerable to human activity during these months.

The project area and cumulative effects area consists of the habitat conditions desired by the timber rattlesnake in that it contains primarily second growth mixed deciduous/conifer forest with several smaller opening interspersed throughout (Tables 5 and 6). The core area patches with the greatest opportunity to support timber rattlesnake populations are all of the larger, more contiguous patches throughout the project area. All patches in the western section provide the oak habitat which rattlesnakes seem to prefer.

*Denning Habitat* – It is well-known that timber rattlesnakes use ancestral/communal den sites for hibernating and that dens are an important aspect of the life history and ecology of these snakes. Free-ranging and dispersing adult males can move several miles from a den; however, the majority of rattlesnakes including neonates, gravid females and sub-adults spend their lives within several hundred yards of the den site. These factors make denning sites a potential limiting factor in whether an area can support viable populations of this species. Wooded hillsides on southern facing slopes accented with rock outcrops where ledges of stone provide opportunities for denning and basking are essential. When winter sets in, fissures in these places provide passage to deep dens for hibernation. The “shading over” by the growth of larger trees on and near a den may cause conditions that are incompatible with long-term viability of timber rattlesnakes. For this reason, surveys within the project area addressed potential sites where improvement of denning habitat could be accomplished. This resulted in a proposal for 2 acres of overstory removal over potential historic timber rattlesnake den sites in the project area.

## **Direct and Indirect Effects**

### *Alternative 1*

There are no activities proposed in this Alternative and therefore there are no direct effects from the activities. The lack of proposals will not impact the rattlesnake foraging or denning habitat as currently mid-structural forest continues to mature.

### *Alternatives 2 and 3*

Direct mortality due to falling trees or heavy machinery from all silviculture treatments is a possibility. However, harvests are typically scheduled during the winter dormant season to optimize the chances for successful forest regeneration. In general, silvicultural treatments are cut under winter frozen conditions to protect soil conditions or for recreation concerns. It is anticipated that a large portion of the proposed harvests will occur between October and mid-May. Risk is considered to be low to none during this period even in the months of April and May when snakes are emerging from hibernation but remain close to hibernation sites. Forest Plan guidelines will be followed in the event that a denning site is located during implementation (USDA-FS 2007a, pp. 87-88). Regeneration treatments proposed under both alternatives (1,335 under Alternative 2 and 1,056 under Alternative 3) create the landscape and forest structural



diversity that seems to be preferred by timber rattlesnakes for foraging and basking. Seedling and sapling habitat and future late-structural forest will increase across both alternatives by 2026 (Table 5) as stands currently in the 80-110 year age class grow. While there is a reduction in the preferred future late-structural habitat in both alternatives compared with Alternative 1, proposed harvest treatments are interspersed within the majority second growth forest (>50% of the project area) and add to the complexity of the forest creating a mosaic of habitats across the landscape.

New road construction on 0.7 miles of forest under Alternative 2 has the potential to cause direct mortality of individuals during implementation and may increase risk to snakes in this area. However, these effects are temporary because the new road will be decommissioned after activities are complete by 2026. Reconstruction of roads on 10.2 miles in Alternative 2 and 8 miles in Alternative 3 may cause temporary effects also through direct mortality and increased human activity during implementation. However, these roads already exist on the landscape and therefore long term impacts from increased human activity are not anticipated over the long term. Road decommissioning on 1 mile under both alternatives will decrease human activity in these areas although there may be temporary effects during construction.

Direct mortality from prescribed fire in oak habitat under both alternatives is a possibility. Proposed prescribed burning for both Alternatives 2 and 3 are anticipated to occur in the spring of the 2013 (135 acres) and 2016 (113 acres). The exact time of burn will vary somewhat from year to year depending on site-specific weather and fuel conditions. It is possible to burn in the summer months of June, July, or August when young snakes are born and more mobile. However, it is not likely that this will occur on the ANF due to the fuel types, canopy moisture and desired management objectives. The greatest likelihood for burn activity is in April and October when the desired conditions required to achieve management objectives are more common (Craig Kostrzewski, pers. comm. March 14, 2011). Basking areas surrounding denning sites within the project area will benefit from the reduction of interfering vegetation around rock outcroppings. In addition, the improved oak habitat may have positive benefits in recruiting prey into the area.

**Table 5. Acres of Available Timber Rattlesnake Habitat within the Project Area.**

Habitat Description	Current (2011)	2026		
		Alt. 1	Alt. 2	Alt. 3
Openings	413	413	413	413
Seedling/sapling habitat, and canopy closure <20%	2	0	1,411	1,132
Future late-structural forest (111-150 yrs)	2,125	10,676	10,272	10,356
Late-structural forest (151-300 yrs)	43	131	131	131
Oak forest type in MA 2.2	4,291			
Oak forest type in MA 3.0	189			

## Cumulative Effects

### *Alternative 1*

There are no activities proposed under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest or private OGD.

### *Alternatives 2 and 3*

Regeneration treatments proposed under both alternatives create the landscape and forest structural diversity that seems to be preferred by timber rattlesnakes for foraging and basking. Seedling and sapling habitat and future late-structural forest will increase across both alternatives by 2031 (Table 6). While there is a reduction in the preferred future late-structural habitat in both alternatives compared with Alternative 1, proposed harvest treatments are interspersed within the majority second growth forest (>50% of the project area) and add to the complexity of the forest creating a mosaic of habitats across the landscape.

All core area patches are expected to have an increase in human activity and greater fragmentation due to OGD. This could mean an increase in fatalities and a reduced dispersal of male snakes in the area. New roads and other developments will be negotiated with operators in order to locate them in areas which avoid rock areas on southern and southeastern exposures suitable for snake dens (USDA-FS 2007, p. 279). Core area patches in the western section of the project area have potential for providing denning habitat as evidenced by the identification of these areas by a herpetile expert (Personal Comm., Robert Zumstein PA Fish and Boat Commission 2010) and historic records of denning locations within these areas. All of these patches are expected to undergo a considerable reduction in size and have a greater human influence (See Morrison Run Environmental Assessment, Chapter 3). However, the proposed activities do not contribute significantly to this change in core habitat or the long term increase in human activity and therefore these activities are not considered to be the cause of a significant cumulative effect.

**Table 6. Timber Rattlesnake Habitat within the Cumulative Effects Area.**

Habitat Description	Current (2011)	2031		
		Alt. 1	Alt. 2	Alt. 3
Openings	788	788	788	788
Seedling/sapling habitat, and canopy closure <20%	5	711	2,518	2,142
Future late-structural forest (111-150 yrs)	2,125	12,804	12,388	12,085
Late-structural forest (151-300 yrs)	43	131	131	131
Oak forest type in MA 2.2	4,333			
Oak forest type in MA 3.0	355			

### **Determination and Rationale**

#### *Alternative 1*

#### **'No impact'**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Seedling and sapling habitat and future late-structural forest will increase across both alternatives by 2026 (Table 5). There is a reduction in the preferred future late-structural habitat in both alternatives compared with Alternative 1, but proposed harvest treatments are interspersed within the majority second growth forest (>50% of the project area) and add to the complexity of the forest creating a mosaic of habitats across the landscape which is preferred by the rattlesnake for foraging.
- Road reconstruction and new road construction have the potential to cause direct mortality of individuals during implementation and may increase risk to snakes in this area due to higher human activity. However, these effects are considered temporary.
- Direct mortality from prescribed fire in oak habitat under both alternatives is a possibility. The greatest likelihood for burn activity is in April and October when the desired conditions required to achieve management objectives are more common however mitigations will limit the impact to snakes. Basking areas surrounding denning sites within the project area will benefit from the reduction of interfering vegetation around rock outcroppings.
- Mitigation for prescribed burn sites surrounding historic denning habitat (compartment 446) (USDA-FS 2007a, p. 80 and A-32):
  - If a burn is to occur between April 15 and October 1 (USDA-FS 2007, p. 280), a sweep of the area to be treated will occur immediately prior to the burn. If no snakes or dens are identified, burn 50 feet away from SVC concern areas which includes rock ledges and outcroppings, large boulder areas, and historic den sites (USDA-FS 2007a, p. 80). This is supported by the following guideline: fire suppression and prescribed fire impacts should employ suppression techniques based on minimal potential loss of or damage to resources (USDA-FS 2007a, p. 95). If snakes or dens are identified, employ Forest Plan guidelines, including a 450 foot buffer zone, around den sites during implementation (USDA-FS 2007a, pp. 87-88).
- Core area patches are expected to have an increase in human activity and greater fragmentation due to private OGD. This could mean an increase in fatalities and a reduced dispersal of male snakes in the area. New roads and other developments will be negotiated with operators in order to locate them in areas which avoid rock areas on southern and southeastern exposures suitable for snake dens (USDA-FS 2007, p. 279). The proposed activities do not contribute significantly to this change in core habitat or the long term increase in human activity and therefore these activities are not considered to be the cause of a significant cumulative effect.

## **SPECIES WITH UNOCCUPIED SUITABLE HABITAT IN THE PROJECT AREA**

### **Birds**

#### **YELLOW-BELLIED FLYCATCHER (*Empidonax flaviventris*)**

##### **Project Area Habitat**

Suitable habitat for the yellow-bellied flycatcher is defined as having all of the following: 1) the presence of saturated soils, 2) a substantial conifer component, 3) dense undergrowth, especially sphagnum moss and 4) sufficient overstory cover to prevent desiccation of the sphagnum mat where nests are built. In 2003 the Northeast Forest Experiment Station conducted surveys on 72 potential sites across the ANF and no flycatchers were found (Stoleson and Ordway 2003).

Within the project area, the best potential nesting habitat may be found in the riparian zones along Morrison Run, Indian Run, North Fork Chappel Fork, Chappel Fork and those forested wetlands found in the upper reaches of streams that support an adequate amount of hemlock. Where floodplains exist (208 acres of floodplain habitat in the project area and 269 acres in the cumulative effects area - all along the Allegheny Reservoir), many features such as suitable herbaceous vegetation, shrub zones, depression areas and wetland inclusions that support sphagnum moss and conifer, may also exist. The NWI Atlas identifies 152 acres of wetland within the project area and 200 acres of wetlands within the cumulative effects area. These are mostly located along the riparian zone of Chappel Fork.

##### **Direct and Indirect Effects**

###### *Alternative 1*

There are no activities proposed in this Alternative and therefore there are no direct or indirect effects to the yellow-bellied flycatcher from activities.

###### *Alternatives 2 and 3*

Regeneration treatments which open the forest canopy may be detrimental to these species if it occurs in or around wetland areas. Field surveys indicate that there are several springs and wetlands with a sphagnum component and conifer overstory located in stands proposed for oak and white pine release in Compartment 446. A wetland was identified in compartment and stand 455016 proposed for a shelterwood sequence. Project design and layout recognizes and gives preferential protection to areas of saturated and semi-saturated soils and conifer. These areas are typically identified in the field and excluded from treatment areas. Depending on their extent, these areas may be included in wildlife reserve area 'clumps'. Another wetland complex was identified in compartment and stand 446002 which is proposed for white pine release- this treatment is expected to improve mature conifer conditions. Forest Plan S&Gs regarding the protection of riparian corridors, wetlands, streams, springs, seeps, and vernal pools will be implemented (USDA-FS 2007a, pp. 74-79). The majority of proposed activities are not located in suitable habitat for the yellow-bellied flycatcher. In addition, gravel pit expansion and transportation developments would not be located in suitable habitat and have no impact on these species. NNIP treatments located within riparian corridors will implement Forest design criteria

(USDA-FS 2007a, pp. 82 and 83; proper use of herbicides on page 40 of the Forest BE; and in Appendix G1 and G2 of the FEIS) and are not anticipated to negatively impact this species.

### **Cumulative Effects**

#### *Alternative 1*

There are no activities proposed under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest or private OGD.

#### *Alternatives 2 and 3*

Previously approved activities are anticipated to have the same effects as those described under the direct and indirect effects analysis. Reasonably foreseeable oil and gas development is not required to follow Forest Service standards and guidelines for wetland buffers and mitigation. However, all oil and gas developments operate under state regulations including a permit process through the Department of Environmental Protection which protects wetland areas. In addition, the ANF conducts biological surveys on proposed lease development that impact federal land and wetlands, vernal pools and riparian zones are identified during this time. Project design features safeguard these resources and modifications to the lease proposal are negotiated with owners and implemented on the ground.

### **Determination and Rationale**

#### *Alternative 1*

##### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

#### *Alternatives 2 and 3*

##### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Regeneration treatments which open the forest canopy may be detrimental to these species if it occurs in or around wetland areas. Project design and layout recognizes and gives preferential protection to areas of saturated and semi-saturated soils and conifer and these areas are typically identified in the field and excluded from treatment areas or put into reserve area clumps.
- Forest Plan S&Gs regarding the protection of riparian corridors, wetlands, streams, springs, seeps, and vernal pools will be implemented (USDA-FS 2007a, pp. 74-79). The majority of proposed activities are not located in suitable habitat for the yellow-bellied flycatcher. In addition, gravel pit expansion and transportation developments would not be located in suitable habitat and have no impact on these species.
- Mitigation for the yellow-bellied flycatcher:
  - Protect the wetlands identified in compartment and stand 455016 proposed for a shelterwood sequence by including in a ¼ acre reserve clump.

- Protect the wetland complex identified in compartment and stand 446002 which is proposed for white pine release by treating with the least invasive method such as girdling. Avoid any kind of heavy machinery in this stand.

## **Fishes**

### **BURBOT (*Lota lota*), LONGHEAD DARTER (*Percina macrocephala*) and MOUNTAIN BROOK LAMPREY (*Ichthyomyzon greeleyi*)**

#### **Project Area Habitat**

Burbot and mountain brook lamprey – These species live in the Allegheny Reservoir and can be found in some of its tributaries. They are common in deep (to 90 meters) pools and typically spawn in lakes but may move into rivers. Their preferred habitat is gravel riffles and the sandy runs of clean, clear streams. Both species are a good indicator of habitat integrity and water quality, and depend on intact, well-functioning riparian and aquatic ecosystems.

Longhead darter - prefers the wider 4<sup>th</sup> order and larger streams on the ANF and shallow, gravel/cobble riffles for spawning habitat.

#### **Direct and Indirect Effects**

##### *Alternative 1*

Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

##### *Alternatives 2 and 3*

Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

#### **Cumulative Effects**

##### *Alternative 1*

Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

##### *Alternatives 2 and 3*

Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

#### **Determination and Rationale**

##### *Alternative 1*

##### **‘No impact’**

- Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

##### *Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

## Invertebrates

**GREEN-FACED CLUBTAIL** (*Gomphus viridifrons*), **HARPOON CLUBTAIL** (*Gomphus desertus*), **MAINE SNAKETAIL** (*Ophiogomphus mainensis*), **MIDLAND CLUBTAIL** (*Gomphus fraternus*), **MUSTACHED CLUBTAIL** (*Gomphus adelphus*), **OCELLATED DARNER** (*Boyeria grafiana*), **RAPIDS CLUBTAIL** (*Gomphus quadricolor*), **RESOLUTE DAMSEL** (*Coenagrion resolutum*), **SKI-TAILED EMERALD** (*Somatochlora elongata*), and **UHLER'S SUNDRAGON** (*Helocordulia uhleri*), and **ZEBRA CLUBTAIL** (*Stylurus scudderi*)

### Project Area Habitat

All of the following species are aquatic insects and are considered MIS on the Forest (USDA-FS 2007b, pp. 3-195, 3-203 to 3-204) because they are good indicators of habitat integrity and water quality, and depend on intact, well-functioning riparian and aquatic ecosystems. Aquatic invertebrates vary in their specific habitat preferences and tolerance to altered stream conditions. There is a variety of aquatic habitats found across the Morrison Run project area. In particular Chappel Fork provides the clear, cold-water, forested, rapid streams with floodplains, long-term ponds and sandy shorelines required by many of these species. Habitat along the Allegheny Reservoir satisfies some of the requirements of large pond or lake species. See yellow-bellied flycatcher for a description of wetlands and floodplain habitat.

The **green-faced clubtail** can be found in high-quality streams and rivers of moderate relief with gravel/sand substrates. Considering that this dragonfly is found in medium to large streams of moderate to significant gradient containing riffles and rapids, the lower reaches of Chappel Fork are large enough to provide suitable habitat for this species.

The **harpoon clubtail** is found in clear, cold-water, forested streams containing pools below sections of rapids. Locally abundant when found, the species is discretely distributed with nymphs emerging from pools below rapids. Adults will use nearby roads or fields as foraging grounds (Evans 2002).

The **Maine snaketail** is found in clear, forested rapid streams and rivers with exposed rocks, often in headwaters. The microhabitat includes areas proximal to rapids or to surface breaking structure such as cobbles, boulders, or deadwood.

The **midland clubtail** inhabits medium to large-sized rivers and large wind-swept lakes. It can also be found in moderate to rapidly flowing streams to larger rivers with clay to sandy substrates or ponds to larger lakes with adequate emergent vegetation.

The **mustached clubtail** inhabits clear, small to medium swift moving forested streams and rivers and lakes with exposed shorelines.

The **ocellated darter** habitat has been described as clear, shallow, rocky, swift-flowing streams and large, rocky, poorly vegetated lakes. Darter larvae are found at the edges of ponds and lakes or in marshes and bogs. They usually live on the stems of living or dead aquatic plants, woody debris, or tangles roots. Species that live in running water usually occur under stones or large water-logged pieces of wood.

The **rapids clubtail** is typically encountered in clean, rocky, well-forested streams and rivers. It is found in the riffle of streams with a gravel substrate.

The **resolute damselfly** was found on two sites along the Clarion River and the habitat there is described as: moderate to swift runs 0.5-1 m deep, and 3-8 dm riffles over various substrates (boulders to stones/cobbles) and areas of still, shallow, shoreline habitats with fine sediments (silt/sand). The second sampling site further upstream on the Clarion River where the habitat was described as a wider part of the river where the stream banks were steep and grassy, with shrub thickets and forest upslope.

The **ski-tailed emerald** utilizes low gradient streams near wetlands, bogs, lake inlets/outlets, and marshy beaver ponds. Also along shorelines of larger streams often perching on grass or debris. The closest documented sighting was along Sugar Run just northeast of the project boundary.

**Uhler's sundragon** can be found in clean rivers and streams with abundant forest cover. Adults can be found in clearings, perching on brush and weeds, and sometimes on the ground.

The **zebra clubtail** is typically found in clear, forested, rapid streams and rivers of alternating current velocity but containing riffle areas. Substrates are gravel and finer organic matter and sand and larvae will burrow deep into these substrates in pools.

## **Direct and Indirect Effects**

### *Alternative 1*

There are no activities proposed in this Alternative and therefore there are no direct effects from the activities. There would be no benefit to these species from in-stream structures proposed under Alternatives 2 and 3.

### *Alternatives 2 and 3*

In Alternatives 2 and 3, the implementation of ANF Forest Plan S&Gs will protect these invertebrates from activities such as timber harvesting and hauling, new road construction, and herbicide application which would otherwise have the potential to create sedimentation or directly alter water quality or riparian areas (USDA-FS 2007a, pp. 74-79). Springs, seeps, and segments of streams within 300 feet of these proposed actions are most susceptible to adverse effects. Many of the smaller streams in the project area empty either into Chappel Fork or into the Reservoir. Therefore adverse effects from harvesting and road reconstruction operations to upper intermittent or small perennial streams such as increased sedimentation could have a negative impact on habitat suitability for these species. Forest Plan S&Gs which are designed to conserve and protect all stream courses and their water quality will be used during silvicultural operations in stands upstream from Chappel Fork. There are no silvicultural treatments which will alter shade over streams or lead to increases in water temperature or evaporation rates.



In-stream structures will benefit those species which utilize dead wood or stream pools and could have indirect benefits by increasing the amount of organic matter that immature dragonflies and damselflies prey upon. These structures will utilize vegetated buffer zones in order to ensure the physical structure remains intact during disturbances such as heavy currents or flooding.

## **Cumulative Effects**

### *Alternative 1*

There are no activities proposed under this alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest or private OGD.

### *Alternatives 2 and 3*

There are considerable changes anticipated to occur to the forest within the cumulative effects area due to OGD. It is anticipated that 1,141 acres of land will be cleared for OGD which includes each well, road, tank batteries, and associated pipelines. Where dirt and gravel roads are constructed close to streams, these can become a chronic source of sedimentation over the long term. Developers are expected to follow Forest Plan standards and guidelines and/or site-specific mitigation measures to protect aquatic habitat. These will be included in the Erosion and Sediment Control Plan that the developer submits to the State for each proposed development. OGD is not required to follow Forest Service standards and guidelines for wetland buffers and mitigation. However, all oil and gas developments operate under state regulations including a permit process through the Department of Environmental Protection which protects wetland areas. In addition, the ANF conducts biological surveys on proposed lease development to identify wetlands, vernal pools and riparian zones. Project design features safeguard these resources and modifications to the lease proposal are negotiated with owners and implemented on the ground.

A large amount of Chappel Fork and Bump Run drainages occur on private lands in the eastern portion of the project area. These flow into the lower section of Chappel Fork and into the Allegheny Reservoir. It is assumed that private land (7,557 acres) timber harvests apply many if not all the state BMPs during their timber harvest operations and as a result, potential effects from sedimentation will be minimized. Forest Service proposed activities will not have a significant cumulative effect when added to these ongoing activities because appropriate S&Gs (see above) would minimize the impact to these species and their habitat.

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under either alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- The greatest impacts to streams and wetlands could result from private OGD. Minimal negative effects are anticipated from the project’s proposed actions since project design features safeguard these resources.

## **Plants**

The following RFSS plants have been grouped into broader habitat conditions than in the Forest BE (USDA-FS 2007, pp.211-273) due to available suitable habitat and where activities are proposed in this project. It should be noted that many of these RFSS plants’ primary habitats are either riparian or wetland habitats in which limited Forest Service management activities occur. Surveys in 2010 were conducted in areas with proposed activities. Suitable habitat for the following species was found, however, plants or populations of these species were not documented with the exception of three species whose identification could not be confirmed based on the plant at the time of sampling, these species are noted in Table 1: bristly black currant (*Ribes lucustre*) and checkered rattlesnake plantain (*Goodyera tessellata*) and will be resurveyed prior to implementation; the third species, mountain starwort (*Stellaria borealis* spp. *borealis*) was noted in an area with no proposed activities and will be resurveyed when conditions permit for any future projects.

The Forest BE (USDA-FS 2007) identified management activities with negligible, beneficial and/or adverse effects based on suitable habitat, type and location of activity, and methods used for implementation, with some activities having both beneficial and adverse effects on some RFSS plant species and this effects analysis is incorporated here by reference. Management activities with potential beneficial or potential adverse effects are discussed in this document; refer to the Forest BE for discussion of activities with potential negligible effects.

### **Non-Forest (Xeric) (USDA-FS 2007, p. 214-219)**

#### **AMERICAN FEVER-FEW (*Parthenium integrifolium*)**

##### **Project Area Habitat**

Suitable habitat for this species is light (sandy), well-drained soil (dry) in open canopy areas, which may include roadsides. Approximately 1,422 acres (7.4% of the project area) of suitable and marginally suitable habitat is distributed across the project area in openings (permanent and temporary 0-20 age class) and road corridors. A population of American fever-few occurs near the project area along SR59 on private land.

##### **Direct and Indirect Effects**

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial direct or indirect effects to this species include: vista clearing, non-native invasive plant (NNIP) treatment, and

road decommissioning. Vista clearing and NNIP treatment would lessen the impact to suitable habitat from woody/invasive plant encroachment and habitat alteration. The benefits from road decommissioning include lessening the opportunity of NNIP introduction/spread and plant collection/disturbance from human activities in areas of suitable to marginally suitable habitat.

The activities with the greatest likelihood of causing adverse direct or indirect effects are road decommissioning, and herbicide treatments for NNIP and wildlife openings based on a comparison of suitable habitat and the locations of proposed management activities. The potential adverse effects from these activities are described on pp. 215-218 of the Forest BE (USDA-FS 2007) and are incorporated here by reference. In summary, these activities may cause direct mortality to plants/populations or indirect impacts via habitat alteration.

#### *Alternative 1*

Under Alternative 1, no new proposed activities will occur so there are no direct or indirect effects to this species. The amount of suitable to marginally suitable habitat is approx. 1,422 acres (7.4% of the project area). New proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative.

#### *Alternative 2 and 3*

NNIP treatment and road decommissioning may occur in areas of suitable to marginally suitable habitat for this species. In areas proposed for NNIP treatment and road decommissioning this species has not been documented. Under Alternatives 2 and 3 the amount of suitable to marginally suitable habitat increases by 0.5% (1,456 and 1,453 acres respectively) from road construction and pit expansion.

### **Cumulative Effects**

Private OGD is a non-federal activities that occurs on Forest Service lands and which may impact this species. Previously approved vegetation management activities will not occur in suitable habitat for this species. Activities on non-Forest Service lands that may impact this species include direct mortality from over-collection of plants or plant parts for medicinal uses and aesthetics, habitat alteration from encroachment by woody vegetation and/or invasive plant species, nutrient enrichment (fertilizers), housing development, roads, gravel pits, trails, or oil and gas development.

Within the cumulative effects analysis area privately owned land is comprised of 57 acres as opening/residential, 49 acres as 0-20 year age class and 501 acres as forested. Land conversion from residential development is not anticipated to occur within these private lands in the next 20 years based on past and current levels of residential development in these lands. There are less than 50 acres of suitable to marginally suitable habitat on private lands within the cumulative effects area and the impacts from the private activities listed above are unknown. Future private OGD on both private and NFS lands are expected to have the greatest effect on habitat in both the short and long-term. Current non-forest (suitable to marginally suitable) habitat on all lands within the CE are is approximately 2,668 acres (13.5%), by 2031 under Alternative 1 that number increases to 3,458 acres (17.5%), under Alternative 2 increases to 3,492 acres (17.7%) and under Alternative 3 lessens by only 3 acres to 3,489 (17.7%).

## Determination and Rationale

### Alternative 1

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

### Alternatives 2 and 3

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

Because there is no documented occurrence of this species in the project area and NNIP treatments are proposed on suitable to marginally suitable habitat, there is only a slight possibility of negative effects from the proposed activities. If this species is documented, the type of treatment chosen will minimize any non-target damage based on site conditions and Forest Plan S&Gs. The benefit to habitat from reducing the impacts from non-native invasive species treatment is greater than the adverse effects from such treatments. Invasive plant species have the potential to degrade suitable habitat and make it less to non-suitable habitat and plants/populations may be diminished/lost; and c) suitable to marginally suitable habitat is distributed across the majority of the project area and is approximately 13.5% (2,668 acres) of the project area and by 2031 is estimated to be 17.5 % under Alternative 1 and 17.7% under Alternatives 2 and 3. While the current and cumulative non-forest condition projections for the project area seem to benefit this species, the exact amount of land classified as ‘bare ground’ versus ‘non-forest’ is difficult to estimate and the actual amount of suitable to marginally suitable habitat is considered to be less than these projections.

### **Non-Forest (Hydric) (USDA-FS 2007, p. 219- 233)**

Non-forest hydric RFSS plant species with suitable to marginally suitable habitat in the Morrison Run project area include: boreal bog sedge (*Carex magellanica* spp. *irrigua*), queen-of-the-prairie (*Filipendula rubra*), rough cotton grass (*Eriophorum tenellum*), stalked bulrush (*Scirpus pedicellatus*) and Wiegand’s sedge (*Carex wiegandii*). The only one of these RFSS that is known to occur near the project area is queen-of-the-prairie, which occurs on private land in the area along SR59 between Marshburg and the junction of SR59 and 219.

### **Project Area Habitat**

Suitable to marginally suitable habitat for these species is characterized as swamps, sphagnum bogs, moist meadows, thickets, and roadsides with a predominately open canopy, species may vary in the levels of tolerable to thriving nutrients/acidity levels. Suitable habitat for these species is limited within the project area and occurs mostly along the lower reaches of North Fork Chappel and Chappel Fork, along the shoreline of the Allegheny Reservoir and along SR321 in the Chappel Fork area. Patches of suitable to marginally suitable habitat may also

occur along Morrison, Hemlock and Brothwell run. Total estimated suitable to marginally suitable habitat is less than 300 acres.

### **Direct and Indirect Effects**

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial and/or adverse direct or indirect effects to these species are non-native invasive species treatment via manual/mechanical and/or herbicides and riparian treatments. Currently there are scattered locations of NNIP within areas of suitable to marginally suitable habitat and their treatment would lessen habitat degradation from NNIP species such as multiflora rose (*Rosa multiflora*), exotic bush honeysuckles (*Lonicera sp.*), and Japanese barberry (*Berberis thunbergii*). If plants are documented prior to or during implementation of NNIP treatments appropriate measures will be taken to eliminate and/or minimize direct impact to plants/populations. The benefit to habitat from lessening the impacts from native and/or non-native invasive plant species is greater than the potential adverse effects from herbicide or mechanical treatment. Habitat alteration from woody NNIP encroachment could eventually exclude these species by shading and competing for space and nutrients. Riparian treatments that remove select trees to create bank stabilization/pool habitat could also have potential beneficial and/or adverse effects on these species since they are shade-intolerant for the most part and require wet soils. Adverse effects from this activity to these species during implementation could be the direct trampling of plants or modification of habitat at the site of the plants/populations. However, to date these species have not been documented in areas proposed for riparian treatment and if they are found, Forest Plan standards and guidelines and/or site specific mitigation measures will be implemented.

#### *Alternative 1*

Under Alternative 1, no new proposed activities will occur so there are no direct or indirect effects to these species. The amount of suitable to marginally suitable habitat is approx. 300 acres. New proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative.

#### *Alternative 2 and 3*

NNIP and in-stream structure treatments may occur in areas of suitable to marginally suitable habitat for these species. Currently there are limited known NNIP species within or adjacent to areas of suitable to marginally suitable habitat. These NNIP would be prioritized for treatment to lessen their impact to habitat of these species following Forest Plan S&Gs. In-stream structure treatments along Pigeon, Hemlock and Morrison run may benefit these species through canopy reduction, however, direct trampling may occur during implementation.

### **Cumulative Effects**

Private OGD is a non-federal activity that occurs on Forest Service lands and which may impact these species. Previously approved vegetation management activities are not proposed in areas of suitable habitat for these species. Suitable to marginally suitable habitat on private land is limited to the headwaters of North Fork Chappel and is estimated to be less than 10 acres. Activities on private lands that may impact these species include direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration/loss from housing development, nutrient enrichment, herbicides, road construction, invasive plant species and OGD.

Within the cumulative effects analysis area privately owned land is comprised of 57 acres as opening/residential, 49 acres as 0-20 year age class and 501 acres as forested. Land conversion from residential development is not anticipated to occur within these private lands in the next 20 years based on past and current levels of residential development in these lands. Future private OGD on both private and NFS lands are expected to have the greatest potential adverse direct or indirect effects to suitable habitat from non-point source pollution, changes in local hydrology and land conversion. While most development that occurs along suitable to marginally suitable habitat (wet swamps, sphagnum bogs, moist meadows and thickets) has to meet state buffers, waivers for closer development may occur and the potential for non-point source pollution (sediment, spills, etc.) may also occur.

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

There are no documented occurrences of these species in areas proposed for activity or in the project area. Additionally, suitable to marginally suitable habitat is limited within the project area and occurs mostly along the lower reaches of North Fork Chappel and Chappel Fork and along the shoreline of the Allegheny Reservoir. If plants are found, Forest Plan S&Gs or site specific mitigation measures will be implemented to conserve these species;

The following site-specific mitigation shall apply to all in-stream structure placement projects:

- A botanist or wildlife tech will survey access pathways and work locations where machinery may be used to place instream structures, specifically in riparian zones where vegetation adapted to wet conditions may be found. If sensitive plants are found they will be protected or avoided.

#### **Mature Forest (Deciduous and Mixed Deciduous) Mesic to Hydric with Partial to full Shade) (USDA-FS 2007, p. 233- 273)**

The following species that have been categorized as occupying habitats that range from mature forest (deciduous to mixed deciduous), mesic to hydric and with partial to full shade and may occupy a range of habitat conditions. This species include the white trout-lily (*Erythronium albidum*), mountain wood fern (*Dryopteris campyloptera*), Hooker’s orchid (*Platanthera hookeri*), checkered rattlesnake plantain (*Goodyera tessellata*), bristly black currant (*Ribes lacustre*), Bartram shadbush (*Amelanchier bartramiana*), creeping snowberry (*Gaultheria hispidula*), Canada yew (*Taxus canadensis*), mountain starwort (*Stellaria borealis spp. borealis*) red currant (*Ribes triste*), and kidney-leaved twayblade (*Listera smallii*).

### **Project Area Habitat**

Suitable to marginally suitable habitat for these species is characterized as mature, deciduous to mixed deciduous forests that are moist to wet where shade may vary based on other site conditions. Suitable habitat to marginally suitable habitat for the white trout lily is mostly confined to the lower reaches of the larger streams in the project area such as Chappel Fork and North Fork Chappel. Suitable to marginally suitable habitat for the mountain wood fern, Hooker's orchid, checkered rattlesnake plantain, bristly black currant, Bartram shadbush, creeping snowberry, Canada yew, mountain starwort, red Currant, and kidney-leaved twayblade is scattered across the project area, typically on mid to lower slope positions where either adequate moisture and/or a combination of aspect provide shaded moist to wet conditions. Species such as Hooker's orchid, checkered rattlesnake plantain and mountain woodfern may find suitable habitat on plateau sites as well.

### **Direct and Indirect Effects**

The activities considered to have the highest likelihood of adverse direct or indirect effects to this species based on the location of suitable habitat and proposed treatments include: burning, vista clearing, riparian treatments, regeneration harvests, intermediate harvests, timber stand improvements, activities to enhance late structural conditions, cultural treatments, road construction, road decommissioning and pit expansion. The potential adverse effects from these activities are described on pages 233-273 of the Forest BE (USDA-FS 2007) and are incorporated here by reference.

#### *Alternative 1*

Under Alternative 1, no new proposed activities will occur so there are no direct effects to these species. The amount of suitable to marginally suitable habitat is approximately 300 acres. New proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative.

#### *Alternatives 2 and 3*

Under Alternatives 2 and 3, proposed vegetation management activities may alter canopy closure in varying amounts based on the type of activity and will affect approximately 2,150 acres (12% of current suitable habitat) under Alternative 2 and 1,790 acres (10% of current suitable habitat) under Alternative 3. Note these acres represent the amount of area (footprint) where activities would take place, some activities occur in stages over the same area over time. As areas with vegetation management transition, mid-story shade may become sufficient for these species, however, it is anticipated that in areas of regeneration harvest this may take decades. Direct mortality from prescribed fire in oak habitat under both alternatives is a possibility. Proposed prescribed burning for Alternatives 2 and 3 is anticipated to occur in the spring of 2013 (135 acres) and 2016 (113 acres). The exact time of prescribed burning will vary somewhat from year to year depending on site-specific weather and fuel conditions, the typical timeframe is early spring and late fall. However, weather conditions may dictate burning to occur during summer months to achieve the desired management objectives. The RFSS plants associated with oak habitat are typically not extant during early spring and late fall so direct mortality is limited. Indirect effects from understory or overstory changes may positively or negatively affect plants depending on their shade-tolerance. In areas of vista clearing, pit expansion, road construction

that convert forested areas to non-forest or in areas cut for basking areas, suitable habitat is not anticipated to return for 44 acres under Alternative 2 and 41 acres under Alternative 3.

### **Cumulative Effects to Plants**

Non-federal activities that occur on Forest Service lands that impact this species include private OGD. Previously approved vegetation management activities on 72 acres will impact suitable habitat for these species. Activities on non-Forest Service lands that may impact these species include direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration or loss from timber harvest, housing development, road construction, invasive plant species or oil and gas development. Within the cumulative effects analysis area privately owned land is comprised of 57 acres as opening/residential, 49 acres as 0-20 year age class and 501 acres as forested. Land conversion from residential development is not anticipated to occur within these private lands in the next 20 years based on past and current levels of residential development in these lands. It is estimated that 75 acres of timber harvest will occur on private lands by 2031. On private lands it is estimated that there is currently 500 or less acres of suitable habitat and that by 2031 there would be approximately 425 or less acres of suitable habitat for these species under all alternatives by 2031. Future private OGD on both private and NFS lands are estimated to convert 790 acres to non-forest conditions.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

#### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

There are no documented occurrences of these species in areas proposed for activity nor in the project area. If plants are found Forest Plan S&Gs or site specific mitigation measures will be implemented to conserve these species;

The following site-specific mitigation shall apply to all in-stream structure placement projects:

- A botanist or wildlife tech will survey access pathways and work locations where machinery may be used to place instream structures, specifically in riparian zones where vegetation adapted to wet conditions may be found. If sensitive plants are found they will be protected or avoided.

NNIP treatments are proposed in suitable to marginally suitable habitat; however, if sensitive species are documented, the type of treatment chosen will minimize any non-target damage based on site conditions and Forest Plan S&Gs. Invasive plant species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost.



Therefore, the benefit to habitat from reducing the impacts from non-native invasive species treatment is greater than the adverse effects from such treatments. Suitable to marginally suitable habitat is distributed across the project area with a majority of it occurring in areas not proposed for treatment other than NNIP treatments.

## **Reptiles**

### **WOOD TURTLE (*Glyptemys insculpta*)**

#### **Project Area Habitat**

This species is associated with forested riparian areas, and ideal habitat includes clear rivers, streams or creeks with hard sand or gravel bottoms and moderate current. Although wood turtles are a forest species, they appear to prefer areas in which there are openings in the stream-side canopy rather than unbroken forest. Abandoned railroad grades and stream-side sand bars provide suitable substrates for egg laying. The wood turtle may occasionally be found in non-riparian habitats such as swamps, bogs, wet meadows, upland fields, and farmland. The wood turtle requires some specialized habitat for hibernating and nesting. Wooded riparian flood plains are abundant on the ANF; however, riparian flood plains that possess enough openings in the canopy to support a thick herbaceous understory may be a limiting factor. Field surveys in 2009 and 2010 along portions of Brothwell Run, Pigeon Run, Wolf Run, Hemlock Run, and Morrison Run, and all of Chappel Fork, North Fork Chappel Fork and Indian Run did not identify any wood turtles within the project area.

#### **Direct and Indirect Effects**

##### *Alternative 1*

There are no activities proposed under this alternative and therefore there are no direct or indirect effects.

##### *Alternatives 2 and 3*

The wood turtle is a good indicator of riparian habitat integrity and water quality, consequently, the potential impacts of the proposed project and Forest Plan S&G discussed under the yellow-bellied flycatcher, apply to the wood turtle as well. The semi-open savannah/orchard habitat associated with riparian areas has the best chance to contain inclusions of suitable nesting habitat. Proposed harvesting treatments, reforestation and road construction proposed in either alternative will not occur in riparian areas, wetlands, or savannah/orchard habitat.

Regarding proposed herbicide application, the risk assessment of sensitive species found in Appendix G of the Forest Plan FEIS concluded that federal listed or proposed threatened, endangered and sensitive species, including the wood turtle will not be affected by the use of glyphosate or sulfometuron methyl as proposed by the ANF (USDA-FS 2007d, p. G2-87).

Proposed transportation activities and changes in road management are not expected to increase access in areas of suitable habitat. Roads that are proposed for decommissioning would lessen the likelihood of vehicle/turtle collisions. This risk to roving individuals especially near riparian areas and wetlands would continue on roads open to the public. In addition to Forest Plan S&Gs concerning riparian habitat and water quality, guidelines will be implemented if a wood turtle is

discovered during project implementation and include the protection of its home range (USDA-FS 2007a, p. 87).

In-stream aquatic habitat improvements through the specific placements of coarse woody material in streams could enhance habitat in the project area by providing quality habitat for prey species and basking sites for the wood turtle.

### **Cumulative Effects**

Based on habitat preference, the effects are similar to those listed under the channel darter and gilt darter sections.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

- There are no activities proposed under this alternative and therefore there are no direct or indirect effects. There are no proposed federal activities under either alternative which would contribute to a cumulative effect when added on to the effects of previously approved timber harvest, private timber harvest, or private OGD.

#### *Alternatives 2 and 3*

#### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Implementation of in-stream activities may disturb individuals that are located in areas with activity, however this disturbance is considered to be rare to absent due to the relatively minimal impact of these treatments.
- The greatest impacts to streams and wetlands could result from private OGD. Minimal negative effects are anticipated from the project’s proposed actions since project design features safeguard these resources.

## **IV. SPECIES PROPOSED TO BE ADDED TO THE RFSS LIST IN 2011**

### **Status of Regional Forester Sensitive Species in the Project Area**

Table 7 summarizes the status of sensitive species proposed for addition to the 2006 list which will be discussed in this section. Each species is categorized depending on their known occurrence and available habitat: 1) species occurrence has been documented in the past and there is occupied habitat in the project area, 2) occurrence has not been documented in the project area, but suitable habitat is present and 3) occurrence has not been documented in the recent past and suitable habitat is not present.

Additionally, seven species analyzed above are proposed for removal from the 2006 Regional Forester Sensitive Species list on the ANF: gravel chub (*Erimystax x-punctata*), kidney-leaved twayblade (*Listera smallii*), osprey (*Pandion haliaetus*), resolute damsel (*Coenagrion resolutum*), sheepnose (*Plethobasus cyphus*), snuffbox (*Epioblasma triquetra*), and Wiegand's sedge (*Carex wiegandii*).

**Table 7. Status of Proposed Regional Forester Sensitive Species in the Project Area.**

Species	Occupied Habitat	Suitable Habitat in the Project Area (Presence not Documented)	No Suitable Habitat in the Project Area
<b>Amphibians</b>			
Four-toed salamander ( <i>Hemidactylium scutatum</i> )		X	
Hellbender ( <i>Cryptobranchus alleganienis</i> )			X
<b>Birds</b>			
Swainson's thrush ( <i>Catharus ustulatus</i> )		X	
<b>Fishes</b>			
Ohio lamprey ( <i>Ichthyomyzon bdellium</i> )			X
<b>Invertebrates</b>			
<b><i>Aquatic Insects MIS</i></b>			
Amber-winged spreadwing ( <i>Lestes eurinus</i> )		X	
American emerald ( <i>Cordulia shurleffi</i> )		X	
Band-winged meadowhawk ( <i>Sympetrum semicinctum</i> )		X	
Black-tipped darner ( <i>Aeshna tuberculifera</i> )		X	
Boreal bluet ( <i>Enallagma phaeton</i> )		X	
Brush-tipped emerald ( <i>Somatochlora walshii</i> )		X	
Comet darner ( <i>Anax longipes</i> )		X	
Crimson-ringed whiteface ( <i>Leucorrhinia glacialis</i> )		X	
Green-striped darner ( <i>Aeshna verticalis</i> )		X	
Mocha emerald ( <i>Somatochlora linearis</i> )		X	
Northern bluet (damselfly)( <i>Enallagma annexum</i> )		X	
Riffle snaketail ( <i>Ophiogomphus carolus</i> )		X	
Sable clubtail ( <i>Gomphus rogersi</i> )		X	
White-faced meadowhawk ( <i>Sympetrum obtrusum</i> )		X	
<b><i>Terrestrial Insects</i></b>			
Eyed brown ( <i>Satyrodes eurydice</i> )		X	
West Virginia white ( <i>Pieris virginiensis</i> )		X	
<b>Mammals</b>			
Little brown bat ( <i>Myotis lucifugus</i> )	X		
Northern myotis ( <i>Myotis septentrionalis</i> )	X		
Tri-colored bat ( <i>Perimyotis subflavus</i> )		X	
<b>Plants</b>			
Awne d sedge ( <i>Carex atherodes</i> )		X	
Blue wild indigo ( <i>Baptisia australis</i> var. <i>australis</i> )			X

Species	Occupied Habitat	Suitable Habitat in the Project Area (Presence not Documented)	No Suitable Habitat in the Project Area
Great-spurred violet ( <i>Viola selkirkii</i> )	X		
Philadelphia panicgrass ( <i>Panicum philadelphicum</i> )			X
Tufted hairgrass ( <i>Deschampsia caespitosa</i> )			X

### White Nose Syndrome (WNS)

Three bat species were proposed for addition to the RFSS list in 2011 in response to the White Nose Syndrome outbreak – a devastating disease which has decimated large populations of cave and mine-hibernating bats in the eastern United States. The little brown bat, northern myotis, and tri-colored bat were once considered common because of their wide distribution, conspicuous maternity colonies (especially little browns) and relatively stable populations. As all three hibernate in caves or mines, emerging evidence demonstrates that these species are in sharp decline due to the rapidly spreading white-nose syndrome (WNS) that has resulted in several extirpations. If unchecked, WNS is ultimately expected to cause regional and range-wide extinction of the little brown myotis in a very short ecological time frame (Kunz and Reichard, 2010). As of 2006, widespread recreational use of caves and disturbance caused by humans during the hibernation posed the greatest known threat to the northern myotis (as well as little browns). In 2009 the ANF issued a cave closure order in a regional effort to prevent the spread of WNS (USDA-FS 2009). WNS causes chronic disturbance of hibernating bats and subsequent high rates of winter mortality. Across the ANF summer roosting and maternity habitat is plentiful; however, caves and mines are rare. For more information regarding white nose syndrome on the ANF see Appendix C1 and the Allegheny National Forest White Nose Syndrome Supplemental Information Report (USDA-FS 2008).

### SPECIES WITH OCCUPIED HABITAT IN THE PROJECT AREA

#### Mammals

#### LITTLE BROWN BAT (*Myotis lucifugus*) and NORTHERN MYOTIS (*Myotis septentrionalis*)

##### Project Area Habitat

Both species occupy mature mixed deciduous forest. Their summer habitat includes foraging along wooded streams and corridors of all types. Their roosts (maternity and day-roosts) include exfoliating bark, snags, tree hollows and man-made structures. Suitable bat habitat is abundant and widely distributed across the project area. For a detailed description of forest habitat in the project, see the Indiana Bat analysis in Appendix C1.

In the summer of 2010, the ANF conducted surveys on 30 sites distributed across the Forest.

These sites targeted suitable bat habitat in a variety of watersheds, management areas, and regions of the Forest. A total of 7 sites were located near the Morrison Run project area in Hamilton, Lafayette and Corydon townships in McKean County. One of these sites was located directly adjacent to the Morrison Run northern boundary near the North Country Scenic Trail and off State Route 59. In total there were 16 net nights with 100 captures total. During the effort, 34 male, 6 female and 1 unknown little brown bat was captured (Bat Conservation and Management, Inc., 2010). Of these, there were 6 males and 1 females caught in the adjacent site. There were 10 male and 11 female northern myotis captured and of these, 3 males and 2 females were caught at the sites adjacent to the project area.

Species are currently being adversely affected by white-nose syndrome at their hibernacula off-Forest, which may lead to decreased numbers over the next several years. Therefore, maintaining summer habitat for the core, reproducing populations appears crucial for bats on the Forest. Application of Forest Plan S&G for the federally endangered Indiana bat will provide crucial habitat features for the little brown and northern myotis.

### **Direct and Indirect Effects**

#### *Alternative 1*

Due to their preferred habitat, the little brown bat and northern myotis effects are similar to that of the Indiana bat. See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.

#### *Alternatives 2 and 3*

See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.

### **Cumulative Effects**

#### *Alternative 1*

See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.

#### *Alternatives 2 and 3*

See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

- See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.

#### *Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- See Indiana Bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1) for analysis.
- Mitigations for Bats:
  - Implement Forest Plan Indiana bat S&Gs (USDA-FS 2007a, pp. 81-82, USDI-FWS 2007) in order to minimize potential harm or harassment to these species and to retain key habitat components on the stand and landscape level.
  - Forest-wide monitoring for the Indiana bat as well as other bats will continue every three years as established in the Forest Plan. In addition, annual monitoring via acoustic transects will continue to gather data for all foraging bats across the Forest. Over time, this data may aid in measuring the effect of WNS on bat distribution and abundance at the landscape level.

## **Plants**

### **Mature deciduous forest (mesic)**

#### **GREAT-SPURRED VIOLET; SELKIRK'S VIOLET (*Viola selkirkii*)**

##### **Project Area Habitat**

This species inhabits moist woods throughout its range, particularly on calcareous or limestone substrates. In Pennsylvania, it grows in cool, moist woods, often on mossy rock outcrops and boulders. Within the project area this species is found on limestone ledges in the forested area of Briggs Run drainage (WPC 2008).

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial direct or indirect effects to this species include: non-native invasive species treatment via manual/mechanical and/or herbicides. The benefits of such proposed actions outweigh any adverse effects of implementation by lessening the impacts of non-native invasive species. Invasive plant species have the potential to degrade suitable habitat and individual plants or populations may be diminished or lost.

Based on site specific suitable habitat locations and where proposed management activities would occur, the activities considered to have the most likelihood of beneficial and/or adverse direct or indirect effects to these species include: regeneration harvests, timber stand improvements, cultural treatments, and road reconstruction. These activities are proposed in the supporting landscape area identified for this species by WPC (2008) and may indirectly affect this species by altering the forest canopy or local hydrology, increasing non-native invasive species introduction or spread via equipment use in adjacent areas.

##### **Direct and Indirect Effects**

###### *Alternative 1*

There are no new activities proposed in this Alternative and therefore there are no direct or indirect effects from proposed activities. The greatest amount of available mid-structural to late-structural forest habitat is anticipated under this Alternative. However, proposed NNIP treatments and their associated benefits for this species would not be realized under this alternative and the continued existence and expansion of NNIP may be harmful to this species.

### *Alternatives 2 and 3*

Under Alternatives 2 and 3, proposed vegetation management activities in Compartment 452 stand 28 and 29 and road reconstruction on the eastern border of these stands occur in the area where this species has been documented. During final layout, the portions of the stands that occur in the supporting landscape will be considered as reserve areas. NNIP treatment in the surrounding area will occur before they invade occupied and/or suitable habitat as well as areas of documented occurrence if necessary to conserve this species.

### **Cumulative Effects**

Most major non-federal activities that occur on Forest Service lands that impact this species are associated with private OGD. Previously approved vegetation management activities on 72 acres will not impact suitable habitat for this species. Activities on non-Forest Service lands that may impact this species include direct mortality from over-collection of plants or plant parts, changes in local hydrology, habitat alteration /loss from timber harvest, housing development, road construction, invasive plant species or oil and gas development. Based on the lack of known occurrences or suitable habitat on private lands within the CE (project area), there are no impacts anticipated on private lands. Currently there is private OGD in both core and supporting landscape habitat for this species. Future private OGD may be proposed on NFS lands, however, during permit review, the presence of this species would trigger the need for review by the DCNR Environmental review section for DEP permits, in which additional conservation measures for private OGD may be identified.

### **Determination and Rationale**

#### *Alternative 1*

#### **‘No impact’**

There are no activities proposed under this alternative and therefore there are no direct or indirect effects and the associated benefits from NNIP treatments are not also realized.

#### *Alternatives 2 and 3*

#### **‘May impact individuals, but is not likely to cause a trend towards federal listing or a loss of viability’**

There is documented occurrence of this species in areas adjacent to proposed vegetation management, road reconstruction and NNIP treatment. However, reserve areas would maintain forest canopy (shade) around occupied, suitable and supporting landscape habitat to conserve this species. Furthermore, suitable habitat is limited in the project area to the Briggs Run drainage; and b) if additional plants are documented within other areas of proposed activities, reserve areas of sufficient size will also be implemented.

The following site-specific mitigation shall apply:

- A botanist or wildlife tech will assist with final design/layout of compartment 452 stands 28 and 29 and road reconstruction to conserve habitat for this species. NNIP treatment in the surrounding area will occur before they invade occupied and/or

suitable habitat as well as areas of documented occurrence if necessary to conserve this species.

## **SPECIES WITH UNOCCUPIED SUITABLE HABITAT IN THE PROJECT AREA**

### **Amphibians**

#### **FOUR-TOED SALAMANDER (*Hemidactylium scutatum*)**

##### **Project Area Habitat**

The four-toed is a lungless salamander so moist environments are critical to its survival. It is considered a habitat specialist and although it is not a vernal pool obligate, it is often found in association with such habitats. Adults live under logs or among mosses in swamps, boggy streams, and wet, wooded or open areas near ponds or quiet, mossy or grass/sedge pools (larval habitat). Sphagnum moss is commonly abundant in suitable habitat.

##### **Direct and Indirect Effects**

###### *Alternative 1*

Due to its preferred habitat, the effects to the four-toed salamander are similar to that of the yellow-bellied flycatcher and the threadrush. See the yellow-bellied flycatcher and threadrush for analysis.

###### *Alternatives 2 and 3*

See the yellow-bellied flycatcher and threadrush for analysis.

##### **Cumulative Effects**

###### *Alternative 1*

See the yellow-bellied flycatcher and threadrush for analysis.

###### *Alternatives 2 and 3*

See the yellow-bellied flycatcher and threadrush for analysis.

##### **Determination and Rationale**

###### *Alternative 1*

###### **‘No impact’**

- See the yellow-bellied flycatcher and threadrush for analysis.

###### *Alternatives 2 and 3*

###### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- See the yellow-bellied flycatcher and threadrush for analysis.



## **Birds**

### **SWAINSON'S THRUSH (*Catharus ustulatus*)**

#### **Project Area Habitat**

The species frequently nests in the understory, particularly in thickets of deciduous shrubs or conifer saplings. The Swainson's thrush is a circumboreal species that prefers dense coniferous forests for breeding. In the Northeast, the preferred habitat is northern mixed hardwood/ or conifer forests, such as the Allegheny National Forest. On the ANF it has been found in mixed hemlock riparian forest and older-growth stand of eastern hemlock, white pine, and American beech.

#### **Direct and Indirect Effects**

##### *Alternative 1*

Due to its preferred habitat, the effects to the Swainson's thrush are similar to that of the northern flying squirrel and the yellow-bellied flycatcher. See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

##### *Alternatives 2 and 3*

See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

#### **Cumulative Effects**

##### *Alternative 1*

See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

##### *Alternatives 2 and 3*

See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

#### **Determination and Rationale**

##### *Alternative 1*

##### **'No impact'**

- See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

##### *Alternatives 2 and 3*

##### **'May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability'**

- See the northern flying squirrel and yellow-bellied flycatcher section for analysis.

## **Invertebrates**

### **Aquatic invertebrates**

**AMBER-WINGED SPREADWING (*Lestes eurinus*), AMERICAN EMERALD (*Cordulia shurleffi*), BAND-WINGED MEADOWHAWK (*Sympetrum semicinctum*), BLACK-**

**TIPPED DARNER** (*Aeshna tuberculifera*), **BOREAL BLUET** (*Enallagma phaeton*), **BRUSH-TIPPED EMERALD** (*Somatochlora walshii*), **COMET DARNER** (*Anax longipes*), **CRIMSON-RINGED WHITEFACE** (*Leucorrhinia glacialis*), **GREEN-STRIPED DARNER** (*Aeshna verticalis*), **MOCHA EMERALD** (*Somatochlora linearis*), **NORTHERN BLUET** (*Enallagma annexum*), **RIFFLE SNAKETAIL** (*Ophiogomphus carolus*), **SABLE CLUBTAIL** (*Gomphus rogersi*) and **WHITE-FACED MEADOWHAWK** (*Sympetrum obtrusum*)

### **Project Area Habitat**

These aquatic insects are also considered MIS on the Forest (USDA-FS 2007b, pp. 3-203 to 3-204) because they are good indicators of habitat integrity and water quality, and depend on intact, well-functioning riparian and aquatic ecosystems. Some aquatic invertebrates are less tolerant to altered stream conditions while others are more tolerant of disturbance. There is a variety of aquatic and terrestrial habitats found across the Morrison Run project area. Chappel Fork provides the clear, cold-water, forested, rapid streams with floodplains, long-term ponds and sandy shorelines required by many of these species. Habitat along the Allegheny Reservoir satisfies some of the requirements of large pond or lake species, and beaver ponds are also suitable habitat for some species. These species utilize off-channel areas that are not within any proposed activities. See yellow-bellied flycatcher for a description of wetlands and floodplain habitat.

The **amber –winged spreadwing** is a pond-breeder. Adult foraging habitat around breeding sites ranges from 30 to 300 meters. There are numerous water-bodies on the ANF created by man or beavers. The 2007 ANF Forest Plan provides for a 100' (30 m) buffer around perennial water-bodies limiting earth disturbing activities.

The **American emerald** belongs to the group of pond-breeding odonates. Adult foraging habitat around breeding sites ranges from 30 to 300 meters. The ANF has a number of water-bodies on the forest, all of which were created by man or beavers.

The **band-winged meadowhawk** is one of the pond-breeding odonates and is usually found near marshy areas in or near woodlands. Foraging adults may range from 30 to 300 meters from breeding habitats.

The **black-tipped darner** is a pond breeding odonate, and prefers acidic waters. Most standing bodies of water on the ANF are acidic along with many streams especially in the Clarion River drainage. On the ANF, there are no naturally occurring lakes or ponds as all bodies of water have been built by man or beavers.

The **boreal bluet** belongs to the group of pond-breeding odonates, but also inhabits flowing water. The species occurs along lakes, ponds, marshes, and streams with slow to moderate flow. It occurs in a wide variety of habitats from sagebrush desert to mountain lakes. Habitat on the ANF is relatively abundant with numerous water-bodies and streams similar in size to where it has been collected.

The **brush-tipped emerald** belongs to a group of river-breeding odonates. It inhabits open swamps and bogs with small streams flowing through them. The ANF has an abundance of small waterways which flow through wetlands and beaver ponds.

The **comet darner** is a pond-breeder. Adult foraging habitat around breeding sites ranges out to 30 meters to as far as 300 meters. Pond-breeding odonates may wander but generally stay within a few km of their emergence pond. The ANF has a number of relatively large impoundment or pond complexes.

The **crimson-ringed whiteface** is a pond-breeding odonate; adults forage around breeding sites and range out from 30 to 300 meters. Pond-breeding odonates may wander but generally stay within a few km of their emergence pond.

The **green-striped darner** belongs to the group of pond-breeding odonates. Pond-breeding odonates may wander but generally stay close to their emergence pond. The ANF has a number of relatively large water-bodies on the forest, all of which are impoundments created by man or beavers.

The **mocha emerald** is one of the river-breeding dragonflies and inhabits small, shaded streams in forested areas that are one to three yards wide with sand, gravel, or rocky substrates. Larvae are aquatic while adults are terrestrial and found in forested habitats surrounding streams.

The **northern bluet** is a pond-breeding damselfly. The collection made in Spring Creek Township was taken from a wetland complex that is primarily a sphagnum bog drained by a network of small streams.

The **rifle snaketail** is a river breeding dragonfly. Lands within the ANF proclamation boundary (both public and private) have numerous medium to large streams and two rivers.

The **sable clubtail** is a river-breeding dragonfly. The species inhabit clear, moderately flowing streams with sand, silt, or rocky substrate. Adults are terrestrial and found in habitats surrounding forested streams. On Salmon Creek (Marienville Ranger District), the habitat where larvae were collected as among overhanging roots and vegetation along banks, and in organic debris and mud in channel pools. The larger streams on the ANF provide for a considerable amount of habitat.

The **white-faced meadowhawk** belongs to a group of pond-breeding odonates. Adult foraging habitat around breeding sites ranges from 30 to 300 meters based on studies. The ANF has an abundance of water-bodies created by man or beavers.

## **Direct and Indirect Effects**

### *Alternative 1*

Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

### *Alternatives 2 and 3*

Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

### **Cumulative Effects**

#### *Alternative 1*

Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

#### *Alternatives 2 and 3*

Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

### **Determination and Rationale**

#### *Alternative 1*

##### **‘No impact’**

- Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

#### *Alternatives 2 and 3*

##### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Due to the similarity in preferred habitat, the effects to these aquatic invertebrates are similar to those described in the analysis for related species currently listed RFSS (p. 32-35).

## **Terrestrial invertebrates**

### **EYED BROWN (*Satyrodes eurydice*), WEST VIRGINIA WHITE (*Pieris virginiensis*)**

The **eyed brown** butterfly habitat is open sedge meadows or open wetlands including the more open parts of shrubby wetlands. The larvae feed on sedges and less often on grasses. Various sedges (*Carex stricta*, *C. lupulina*, *C. bromoides*, and *C. trichocarpa*) in the sedge family (Cyperaceae) serve as the host species for the caterpillar.

The **West Virginia white** butterfly inhabits mesic hardwood forests, hardwood-northern conifer-mixed forests on rich soils, and hardwood swamps. An important feature of suitable habitat is a plentiful supply of the foodplants, specifically toothworts, over a substantial area. The species is more likely to occur if there are many food plant patches in a larger tracts of unbroken forests.

### **Direct and Indirect Effects**

#### *Alternative 1*

Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39)

and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

#### *Alternatives 2 and 3*

Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39) and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

### **Cumulative Effects**

#### *Alternative 1*

Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39) and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

#### *Alternatives 2 and 3*

Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39) and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

### **Determination and Rationale**

#### *Alternative 1*

##### **‘No impact’**

- Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39) and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

#### *Alternatives 2 and 3*

##### **‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- Due to the similarity in preferred habitat and the habitat requirements of the larval host plant, the effects to the eyed brown are similar to those described for wetland-associated plants (p. 37-39) and the effects to the West Virginia white are similar to those described for American ginseng (p. 19-22).

### **Mammals**

#### **TRI-COLORED BAT (*Perimyotis subflavus*)**

##### **Project Area Habitat**

This bat generally prefers landscapes with partly open country with large trees and woodland edges. It avoids deep woods and open fields. The tri-colored bat seems to prefer watercourses for foraging but is not restricted to these sites and will also feed at forest edges. The species has

been noted to roost among the foliage of trees, in buildings, in the twilight zone (a cool, damp area with some light) of caves, and in Spanish moss. Initial information concerning summer habitat indicates the use of deciduous forest trees in landscapes that include interspersed non-forested patches. Generally, maternity colonies utilize manmade structures or tree cavities; often in open sites that would not be tolerated by most other bats. The tri-colored bat uses caves, mines, and rock crevices as hibernation sites in winter, roosting in the warmer parts of the structure. Survey results from 7 mist-netting sites near the project area resulted in no captures of this species.

## **Direct and Indirect Effects**

### *Alternative 1*

See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

### *Alternatives 2 and 3*

Regeneration treatments proposed under both alternatives (1,335 under Alternative 2 and 1,056 under Alternative 3) create the forest structural and landscape diversity that seems to be preferred by this species for foraging and roosting. Proposed harvest treatments are interspersed within the majority deciduous second growth forest (>50% of the project area) and add to the complexity of the forest creating a mosaic of habitats across the landscape which this species appears to prefer.

See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

## **Cumulative Effects**

### *Alternative 1*

See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

### *Alternatives 2 and 3*

There are considerable changes expected to occur to the forest within the cumulative effects area due to OGD. It is anticipated that 1,141 acres of land will be cleared for OGD by 2031. This will modify bat habitat by converting forested habitat to bare areas. New road construction may create more foraging habitat on forest edges for this species in addition to creating travelways. However, roads are not a significant source of forage material since these are non-vegetated surfaces. The 3% change in the cumulative effects area is not anticipated to cause a significant reduction in available habitat for this species.

See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

*Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- See Indiana bat analysis in the Morrison Run Biological Assessment for Threatened and Endangered Species (Appendix C1).

## **Plants**

### **Non-Forest Hydric**

#### **AWNED SEDGE (*Carex atherodes*)**

##### **Project Area Habitat**

The awned sedge is usually found on open slopes with seeps. It is a perennial of wetland habitats and can grow in deeper water than other *Carex*. This sedge has been found in floodplain meadows and open woods, old fields, wet ditches, stream sides, open river and lake shores, willow shrub-swamps, power-line or utility cuts and other wet open habitats. On the ANF, it is found in riparian forest and scrub-shrub habitat along Tionesta Creek. Speckled alder, sphagnum, and various rushes, grasses, round-leaved sundew and small green woodland orchid were also growing along the same ditch and road shoulder. There are no known populations within the project area.

##### **Direct and Indirect Effects**

###### *Alternative 1*

Due to the similarity in preferred habitat, the effects to the awned sedge are similar to that of the threadrush and other plants. See Non-forested hydric species for analysis.

###### *Alternatives 2 and 3*

See analysis for other plants found in non-forested hydric habitats (p. 37-39).

##### **Cumulative Effects**

###### *Alternative 1*

See analysis for other plants found in non-forested hydric habitats (p. 37-39).

###### *Alternatives 2 and 3*

See analysis for other plants found in non-forested hydric habitats (p. 37-39).

## **Determination and Rationale**

### *Alternative 1*

#### **‘No impact’**

- See analysis for other plants found in non-forested hydric habitats (p. 37-39).

### *Alternatives 2 and 3*

**‘May impact individuals but is not likely to cause a trend towards federal listing or a loss of viability’**

- See analysis for other plants found in non-forested hydric habitats (p. 37-39).

## V. SUMMARY OF DETERMINATIONS

Table 8 summarizes the determination of impact for each species with suitable habitat in the Morrison Run Project area based on the analysis of the alternatives provided in the sections 3 and 4 above.

**Table 8. Determinations for ANF Regional Forester's Sensitive Species.**

Common Name	Alternative 1	Alternatives 2 and 3
Amphibians		
Four-toed salamander*	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
Birds		
Bald eagle	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
Northern goshawk		
Osprey <sup>x</sup>		
Swainson’s thrush*		
Yellow-bellied flycatcher		
Fishes		
Burbot	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
Channel darter		
Gilt darter		
Mountain brook lamprey		
Invertebrates		
Aquatic Insects		
Amber spreadwing*	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
American emerald*		
Band-winged meadowhawk*		
Black-tipped darner*		
Boreal bluet*		
Brush-tipped emerald*		
Comet darner*		
Crimson-ringed whiteface*		
Green-faced clubtail		
Green-striped darner*		
Harpoon clubtail		
Maine snaketail		
Midland clubtail		



Common Name	Alternative 1	Alternatives 2 and 3
Mocha emerald*		
Mustached clubtail		
Northern bluet*		
Ocellated darner		
Rapids clubtail		
Resolute damsel <sup>x</sup>		
Riffle snaketail*		
Sable clubtail*		
Ski-tipped emerald		
Uhler's sundragon		
White-faced meadowhawk*		
Zebra clubtail		
<b>Terrestrial Insects</b>		
Eyed brown*	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
West Virginia white*		
<b>Mammals</b>		
Little brown bat*	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
Northern flying squirrel		
Northern myotis*		
Tri-colored bat *		
<b>Plants</b>		
American fever-few	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
American ginseng		
Awned sedge*		
Bartram shadbush		
Boreal bog sedge		
Boreal starwort		
Bristly black currant		
Butternut		
Canada yew		
Checkered rattlesnake plantain		
Creeping snowberry		
Great-spurred violet*		
Hooker's orchid		
Kidney-leaved twayblade <sup>x</sup>		
Mountain starwort		
Mountain woodfern		
Philadelphia panicgrass		

Common Name	Alternative 1	Alternatives 2 and 3
Queen-of-the-prairie		
Rough cotton-grass		
Stalked bulrush		
Swamp red currant		
Thread rush		
White trout-lily		
Wiegand's sedge <sup>x</sup>		
Reptiles		
Timber rattlesnake	No impact.	May impact individuals, but will not cause a trend toward federal listing or loss of viability.
Wood turtle		

\* Species proposed for addition to the 2006 list for the new 2011 RFSS list.

<sup>x</sup> Species proposed for removal from the 2006 list for the new 2011 RFSS list.

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